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THE MADRAS

QUARTERLY JOURNAL

OF

MEDICAL SCIENCE.

EDITED BY

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THE MADRAS

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JULY 1, 1863.

PART I.

ORIGINAL ESSAYS.

ART. I.—*Statistical Gleanings from the Records of the 2nd Madras European Light Infantry, now H. M.'s 105th Regiment M. L. I., for the years 1840 to 1860 inclusive.* By J. L. RANKING, Surgeon Major, 23rd Brigade R. A., lately attached to the 2nd E. L. I.

THE field of observation afforded by the records of the 2nd E. L. I., now H. M.'s 105th Regiment of Foot or Madras Light Infantry, from the date of the formation of the Regiment in 1839 till the close of the year 1860, having been gleaned with a view to the acquisition of that knowledge of its Medical history which it is incumbent upon every Surgeon to attain on entering upon a new charge; it has occurred to me that the numerical statements and tables put together may possibly contribute towards building up that stock of information, bearing upon the vital statistics of our European armies in India, and more especially in this Presidency, which is being erected upon the labours of many coadjutors.

It is necessary to observe that the Regiment has passed the whole period of its service *in Garrison*, and conse-

quently that no war casualties affect the returns of sickness and mortality.

The history of the corps in fact, so far as it is illustrated by these tables, embraces a period of 21 years, totally devoid of all those causes of increased mortality incidental to service in the *field* (irrespective of actual conflicts with an enemy), and is therefore especially available for the determination of the rates of sickness and mortality pertaining to European troops in this Presidency during "piping times of peace."

Many contributions to the vital statistics of European troops in India have been recently laid before the profession, several of which enrich the pages of Indian Medical literature.

These will be laid under contribution for comparison with any data afforded by the records of this Regiment.

The scope to be given to this paper I do not attempt to determine at this stage, but at present it does not profess to be more than a simple expression of a numerical analysis of the annual "returns," and "tabular statements."

With the knowledge possessed of the great difficulty ever experienced in eliminating from all returns of this nature the various elements of error, no attempt will be made at close generalization, and any inferences drawn must be taken with reserve, inasmuch that, with all our caution, they are too apt to be advanced upon insufficient ground, or insecure data.

Dr. Ewart's work "Vital Statistics of the Armies in India," will be taken as the principal standard of comparison. The tables therein given are compiled from the works of the more recent writers, whose labors he has acknowledged, and may be accepted as in every way as trustworthy as such tables can be made.

Before however entering upon the statistics of the Regiment, it may not be considered out of place to sketch very briefly, the Medical History of the corps; noting the stations it has occupied, and any salient points bearing upon its general sanatory condition, which may be culled from the annual reports, attributable to climatic, local, or other influences, which may at various periods have affected the ratio of sickness and mortality.

HISTORICAL SKETCH.—The 2nd Madras European Light Infantry was raised at the close of the year 1839, and *Arnee* selected as the station at which the young Regiment was to receive its organization, under the command of Lieut. Col. (now Lieut. General) A. B. Dyce.

Raised at Arnee.

In December 1839, the period at which its Medical History may be said to commence, the Regiment was constituted of "30 or 40 old soldiers transferred from the 1st "Madras European Regiment (now H. M.'s 102nd Royal Re-"giment of Foot, Madras Fusiliers) and young lads to the "number of 446, recruits, lately arrived from England."

At that station, not the most favorable one which could have been selected for raising a Regiment of recruits, and which was destined to almost immediate abandonment as a cantonment for European troops, the young Regiment suffered severely from Cholera, which broke out on the 3rd of May 1840, and in a few hours carried off twenty men. But independent of this scourge the health of the Regiment, as indicated by the ratio of admissions to strength, which equalled 2,637 per 1,000, was below par; and on the 12th of October, 1840, whether consequent upon existing sickness, or in the ordinary course of relief does not appear, it marched for Bangalore, arriving at that station on the 28th of the same month.*

The march to Bangalore was marked by peculiar exemption from disease. Out of a body of 556 men and officers, only 7 men were upon the sick list; and the destination was reached "without a casualty either in the Regiment or amongst the followers."

This special immunity, "upon a road which is usually dreaded as a most certain source of Cholera," is attributed to "the excellent arrangements made by the Commanding Officer who, deviating from the routine followed as to encampments, invariably selected high and dry localities at a distance from villages apart from swamp and jungle."† The

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* At this period I was appointed to do duty with the Regiment, in order to obtain that initiation into the pathology and therapeutics of Indian diseases required by the rules of the service, under the tuition of Mr. J. L. Geddes, then Surgeon of the Regiment, a gentleman remembered by all, who like myself were committed to his guidance, with sentiments of the highest regard and esteem.

† This and other passages between inverted commas, unless otherwise accounted for, are quotations from "Annual Medical Reports."

internal economy of the camp was strictly conducted. All cattle, both public and private, were excluded and picketted at a distance in the rear; and coffee was issued to the men before starting, and half way on the march.

These measures, at a period when sanitary precautions were not so much studied as now, certainly reflected credit upon the Officer commanding; but I doubt not, that at least an equal share belongs to the Medical Officer who so modestly throws the mantle of praise over the shoulders of his Military Chief.

BANGALORE.—The change to Bangalore proved a most advantageous one, evidenced by the "generally improved appearance of the men, women, and children of the Regiment, by the comparative paucity of admissions of each disease into Hospital, and by the complete exemption from sickness of the officers and their families."

In 1842, however, Cholera again visited the Regiment, numbering in a short period 20 victims.

With this exception, the health of the Regiment continued good, and as will be hereafter shown, the records sustain the character for salubrity which Bangalore enjoys as a station for European troops.

What more particularly attracts attention and deserves record, is the very small number of admissions at this station from Ebrietas and Delirium Tremens.

The Annual Report for 1842, alludes to this and bears honorable testimony to the general and moral discipline and efficiency of the Regiment, as influenced by the comparative absence of the vice of intemperance.

The Regiment left Bangalore for *Trichinopoly* by wings, on the 5th and 25th of January 1845, the Right Wing and Head Quarters reaching its destination on the 29th of the same month, and the Left Wing on the 15th of February.

It therefore occupied Bangalore, a station which has the reputation of being not only the most agreeable to the *feelings*, but also of possessing a climate peculiarly adapted (for a tropical one and compared with other stations in this Presidency) to the European *constitution*, for a period of four years.

It will not be out of place here to give a table illustrative of the ratio of sickness and mortality experienced at that station, though I shall make no further comment upon

the table at present, than to observe that the death rate is given both inclusive and exclusive of cholera, which disease cannot be carried to the account of the *ordinary* mortality of the station.

Table exhibiting the Sickness, Mortality, &c., &c., at Bangalore, for four years, from 1841 *to* 1844 *inclusive.*

Years and Average Strength.	1841 838·5	1842 1011	1843 938·5	1844 899·11	Total. 3687·11	Ratio per cent. to strength.
Admitted	1546	1606	1049	911	5112	138·5
Died. By ordinary disease.	13	21	14	9	57	1·54
Died. By Cholera	0	16	0	0	16	·43
Died *out of* Hospital or *in other* Hospitals	2	6	0	2	10	·27
Invalided, Pensioned, or Discharged on account of disease	4	2	14	6	26	·70
Decrement by all causes*	34	47	28	17	126	3·41

The Regiment it has been observed left Bangalore by wings.

The Head Quarters accomplished the journey without a casualty either in the Regiment or amongst the camp-followers.

The Left Wing which "*followed,*"—by which expression it is meant, it is presumed, that it *marched by the same route,*—came into cantonments "with the germs of disease strongly "engrafted, and which became, after but a short repose in "Garrison, soon fatally developed."

Fevers of a severe type became prevalent, and it is recorded that two-thirds of the patients attacked came from this, the Left Wing.

It is however further recorded that that wing was located in the *Bomb proof* and *tiled* Barracks, in which the men complained much more of the intense heat, than their comrades of the Right Wing, who were housed in the thatched, or temporary, barracks outside the quadrangle.

The sickness which prevailed in this, the Left, Wing may reasonably be attributed to the conjoint agency of the following, amongst other causes: 1st, to the fact, of its following upon the heels of the Head Quarter Wing, occupying the same encamping grounds, redolent with those sources

* Includes "transfers," "discharges, by purchase," "desertions," &c., &c.

of atmospheric impurity inseparable from spots lately occupied by large bodies of men; 2nd, to the daily increasing heat of the weather; and 3rd, to its location in the Bomb proof and tiled Barracks, the evils of which would be the more felt by a body of men direct from the comparatively cool and invigorating climate of Bangalore.

But whatever may have been the cause or causes, it is recorded that a very severe type of fever prevailed, and which will be further alluded to in another sheaf of these gleanings.

TRICHINOPOLY.—The climate of Trichinopoly is well known to be one of the hottest, but not necessarily one of the most unhealthy, of the Madras Presidency. It is subject to frequent visitations of Cholera; Fevers of ardent type are common; cases of Insolatio or Heat Asphyxia not rare; and disease generally aggravated by intemperance, due to the great facility with which intoxicating beverages are procurable.

This fact is well established by the returns—a large increase in admissions under the head of "Delirium Tremens" and "Ebrietas" marks the record of the first year's residence.

The health of the Regiment suffered considerably, and the returns (in the language of the report for 1845) "present a "very formidable amount of disease both as to the numeri- "cal aggregate as well as to the severe nature of the several "forms of sickness. Twice the strength of the Regiment "was admitted into Hospital and the mortality of the "corps was considerable."

Table exhibiting the Sickness, Mortality, &c., &c., at Trichinopoly, for the 5 years from 1845 to 1849 inclusive.

Years and Average Strength.	1845 850·5	1846 842·25	1847 945·5	1848 1044·4	1849 1030·5	Total Strength. 4713·15	Ratio per cent. to Strength.
Admitted	1506	1366	1844	2156	1963	8835	187·4
Died. By ordinary disease	31	11	11	18	29	100	2·12
Died. By Cholera	5	4	1	1	4	15	·30
Died *out of* Hospital or *in other* Hospitals	0	1	8	8	1	18	·38
Invalided, Pensioned, or Discharged for disease, &c.	5	6	10	21	57	99	2·10
Decrement by all causes	41	25	31	48	93	238	5·40

From Trichinopoly the Regiment marched by wings, at the close of 1849 and commencement of 1850, to Secunderabad.

No detailed history of this march is given in the report for 1850-51. An allusion however to the loss of two men by Cholera in the Left Wing on its march to Negapatam, indicates the line of route, viz., to Negapatam, thence by sea to Masulipatam, and thence again by land to Secunderabad.

SECUNDERABAD.—The largest mortality which pervades the records of the Regiment appears in the returns of its second year's residence at this station, where the deaths in Hospital were in the ratio of 62·7 per 1,000 of strength. But eight deaths occurred "*out of* Hospital," and one "*in other* Hospitals," raising the death-rate for that year to 71· per 1,000!

To this mortality, Dysentery—the disease which has ever given to this station, or rather to the *old Infantry Barracks*, a reputation for great insalubrity,—mainly contributed.

It prevailed in an epidemic and most fatal (Typhoid) form, and is attributed in the report for 1851-52 to intemperance and neglect of sanitary precautions.

A large sum of money, (some 25,000 Rupees) was distributed as bounty to men who had completed twelve years' service and were fit for field duties; and the result was intemperance to an alarming extent, as indicated, *directly*, by 102 admissions by Delirium Tremens and 68 by Ebrietas, and *indirectly* by 408 cases of Dysentery with 49 deaths; some of these casualties being due to complication with Delirium Tremens. The Medical officer then in charge strongly and justly contended that this excessive sickness and mortality was entirely of local and preventible origin. The joint effect of the wide-spread intemperance before alluded to, and insanitary influence in and around the Barracks, enhanced by a deficiency of the usual rains, at the opening of the monsoon, which did not fall in sufficient abundance to scour the surface and remove all impurities around the Barracks, but, by merely saturating organic matter, led by the agency of heat to rapid decomposition and its attendant evils.*

* I do not think that sufficient importance has been attached to *overcrowding*, as one of the causes of the sickness prevalent at this time. No distinct allusion is made to the subject, and yet the Regiment was close upon 1,000 strong.

The following year the mortality fell to the very low figure of 5·18 per 1,000 of strength, and which is attributed to the adoption of large measures of sanitation, more efficient conservancy, and a favorable season, an abundant rain-fall, and efficient surface cleansing.

These doubtless contributed largely and mainly to the result; but it must be remembered, that disease had done its worst the year previous—had mown down all delicate, intemperate, worn out, and broken-down men, narrowing its further sphere of action; still the mortality never again rose above the moderate ratio of 12· per 1000.

Table exhibiting the Sickness, Mortality, &c., &c., at Secunderabad, from 1850-51 to 1854-55.*

Years and Average Strength.	1850-51 980·9	1851-52 988·75	1852-53 964·2	1853-54 905·4	1854-55 790·	Total strength. 4628·85	Ratio per cent. to strength.
Admitted	1663	1958	1781	1580	1574	8556	184·8
Died. By ordinary disease	22	62	5	12	10	111	2·39
Died. By Cholera	0	0	0	0	1	1	·02
Died *out of* Hospital or *in other* Hospitals	5	9	6	17	26	36	1·36
Invalided, Pensioned, or Discharged for disease	3	4	1	8	29	45	·96
Decrement by all causes	33	80	17	118	89	337	7·28

From Secunderabad the Regiment proceeded by Wings on the 29th of January and 27th of February 1855, "and with "the exception of two casualties en route the entire Regi- "ment reached Madras in high health, leaving no sick nor "any other men behind."

It occupied the Barracks at Fort St. George for one year only.

MADRAS.—A Table for the period is given solely to complete the series. In itself it is of little statistical value, and the only point requiring notice is that the Regiment was

* This period includes the march of the Regiment from Trichinopoly to Secunderabad, and from Secunderabad to Madras.

weeded of many invalids prior to its embarkation for service in Burmah.

Table exhibiting the Sickness, Mortality, &c., at Madras, for the year 1855-56.

Years and Average Strength.	1855-56 894	Ratio per cent.
Admitted	1461	163·4
Died. Ordinary disease	11	1·23
Died. Cholera	0	
Died *out of* or *in other* Hospitals.	11	1·23
Invalided, Pensioned, Discharged for disease	49	5·48
Decrement by all causes	94	10·51

The Regiment sailed for Rangoon by detachments. Two companies of the Left Wing embarked on the 15th of January and 3 companies on the 19th of January 1856, the Right Wing and Head Quarters following on the 22nd March in the steam-ship "Zenobia" and transport "Tubal Cain."

BURMAH.—Head Quarters reached Rangoon on the 29th of the same month, remained encamped there till the 4th of April, when it commenced its voyage to Tonghoo in a fleet of 140 country boats.

It reached Pegu the same day, disembarked and encamped there till the 9th, as the tides were then at the "*spring*" and the "*bore*" in the Sitang river dangerous.

On the morning of the 9th the march across the narrow slip of land separating the Pegu from the Sitang rivers was commenced by torchlight.

This march was a trying one—the "bore" having the day previous overflowed the banks of the river, had inundated the whole country filling every creek and nullah, rendering the last few miles nearly impassable from mud and water. The men were consequently greatly fatigued and did not reach Kyassoo on the Sitang river till 9 A. M., while their exhaustion was enhanced by the absence of water or any refreshment en route. This was owing to some errors in the arrangements and which *inter alia* were to have comprised coffee half way.

At the encamping ground at Kyassoo the want of good drinking water was also experienced: the men were seriously distressed, and some acts of insubordination occurred in consequence.

From Kyassoo the remainder of the journey was by water, and those only who have voyaged in the sharp and shallow streams of Burmah and in the boats peculiar to the country, the mode of progression being by poling and tracking, can fully appreciate the tedium and discomfort of such a journey.

TONGHOO.—At Tonghoo the Regiment enjoyed but an average condition of health; indeed, judging by the returns alone, its standard of health was below that which marked the last 3 years of its residence at Secunderabad.

It is remarked in the report for 1857-58 that "drunkenness is scarcely known there," but this statement requires some qualification. During the first year's residence it is true there were no cases of Delirium Tremens and only 5 of Ebrietas, but the next year 13 cases of the former and 26 of the latter are recorded.*

The remark is probably comparative only, and with reference to the extent to which intemperance had prevailed at Secunderabad.

The Regiment was not destined to remain long at Tonghoo. Consequent upon the outbreak of the mutiny in Bengal, 3 companies were ordered down to Rangoon and embarked for India on the 19th of July 1857: 2 other companies

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* 13 cases of Delirium Tremens in one year certainly favours the supposition, that alcoholic stimulants were sufficiently easily obtained.

of the Left Wing followed on the 18th of August, and the Right Wing and Head Quarters on the 2nd of April 1858.

From July 1857, the Regiment may be said to have been so much broken up into parties, each placed under different sanitary relations, as much to invalidate the returns of sickness and mortality for the period—3 companies we have seen were at Tonghoo, including journeys to and from Rangoon, only 1 year and a half—2 other companies remained one month longer, while the Head Quarter wing only completed 2 years' service.

The returns then and the table framed from them are comparatively of small value as illustrating the effects of the climate of Tonghoo upon the European constitution.

Table exhibiting the Admissions, Deaths, &c., at Tonghoo, for the years 1856-57 *and* 1857-58.

Years and Average Strength.	1856-57 862	1857-58 778·41	Aggregates. 1640·41	Ratio per cent.
Admissions.....	1021	1156	2177	132·7
Died. Ordinary disease..	14	10	24	1·46
Died. By Cholera.....	0	1	1	·06
Died *out of* and *in other* Hospitals.....	13	16	29	1·76
Invalided, Pensioned, & Discharged on account of disease.....	17	17	34	2·07
Total decrement by all causes.....	79	55	134	8·16

The arrival in India of the different detachments, is thus entered upon the records.

TRICHINOPOLY.—2 Companies of the Left Wing arrived at Trichinopoly on the 31st of August 1857,—3 Companies of the same wing on the 29th of December 1857 ; while the Right Wing and Head Quarters reached the same station on the 27th of April 1858, detaching en route two companies to Waltair which continued to garrison that station till October 1861, when they rejoined the Regiment which, at the time I write, is completing its *second* period of residence at one of the hottest stations in Southern India.

Table exhibiting Admissions, Deaths, &c., at Trichinopoly, for the years 1858-59—1859-60 *and* 1860 (9 *months.*)

Years and Average Strength.	1858-59 699·33	1859-60 466·83	1860 9 Months 461	Aggregates. 1627·16	Ratio per cent.
Admitted.....	1182	934	667	2783	171·0
Died. By ordinary disease	7	4	6	17	1·04
Died. By Cholera.....	3	0	1	4	·25
Died *in* and *out of* Hospital and *in other* Hospitals.....	3	2	2	7	·43
Pensioned, Invalided, and Discharged for disease.....	21	46	80	147	9·03
Decrement by all causes	34	52*	89	175	10·75

Such is a brief sketch of the not very eventful life of the Regiment for a period of 21 years, its monotony varied only by a *march* on the occasion of the usual periodical *relief.* Its journeyings however, have not been attended by any of those calamitous outbreaks of Cholera so liable to invade troops upon the line of march.

I conclude this Sketch with a table exhibiting at a glance

* This does not include discharges under the act transferring the Regiment to the Crown under which 299 men left the Regiment.

the varying rates of Sickness and Mortality at each station occupied by the Regiment.

	Stations	Arnee.	Bangalore.	Trichinopoly.	Secunderabad	Madras.	Tonghoo.	Trichinopoly.	Total.
	Periods	1840 (ten months.)	1841-44	1845-49	1850-51 / 1854-55	1855-56	1856-57 / 1857-58	1858-59 to 31st Dec.1860	
	Strength	513·3	3687·11	4713·15	4628·85	894	1640·41	1627·16	17,703·71
	Admitted	1354	5112	8835	8556	1461	2177	2783	30278
Died.	By ordinary disease	7	57	100	111	11	24	17	327
Died.	By Cholera	20	16	15	1	0	1	4	57
Died.	*Out of* and *in other* Hosps.	0	10	18	63	11	29	7	138
	Invalided, Pensioned and Discharged for disease	1	26	99	45	49	34	147	401
	Total decrement by all causes.	28	126	238	337	94	134	175	1132
Ratio per cent. to strength.	Admitted	263·78	138·5	187·4	184·8	163·4	132·7	171·0	171·02
Ratio per cent. to strength.	Deaths in Hospital	5·26	1·97	2·42	2·41	1·23	1·52	1·29	2·16
Ratio per cent. to strength.	Do. *out of* do. and *in other* Hospitals	0	·27	·38	1·36	1·23	1·76	·43	·78
Ratio per cent. to strength.	Invalided, Pensioned and Discharged for disease.	·19	·70	2·10	·96	5·48	2·07	9·03	2·26
Ratio per cent. to strength.	Decrement by all causes.	5·45	3·41	5·40	7·28	10·51	8·16	10·75	6·39

GENERAL STATISTICS.

The Statistical notes I have to offer, naturally resolve themselves into *General* and *Special: General* as relates to the aggregate of sickness, mortality, &c., exhibited by the "returns" for the whole period; *Special* as regards (1st,) Statistics of *diseases*, and *classes of disease*, and (2nd,) as relates to sickness and mortality attaching to the different *stations* at which the Regiment has been cantoned.

Reference to the large table A in the Appendix furnishes the following broad results:

NON-COMMISSIONED OFFICERS AND SOLDIERS.

Aggregate strength for the period ...		17,703
Admissions by disease		30,278
Died in Hospital...		384
Of mean strength per 1,000	Admitted	1710·27
	Died in Hospital ...	21·69
Violent and accidental deaths not included in the above		48
Deaths "*in other*" Hospitals		90
Total deaths *in* and "*out of*" Hospital...		522
Ratio per 1,000 to strength of *all deaths*...		29·48
Invalided, Pensioned 247		401
Discharged on account of disease 154		
Ratio per 1,000 of strength by *Invaliding, Pension*, and *Discharge for disease*..		22·65
Discharged for other causes		209*
Total *decrement* by deaths *in* and *out of* Hospital. Violent and accidental do. do. in *other* Hospitals. Pensioned, Invalided, and "Discharged for other causes"		1,132
Average annual rate of decrement from all causes.		53·90

At which rate a Regiment of 1,000 men would become extinct in 18·55 years.

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* This does not include 299 retirements under the amalgamation order.

The above tabular statement places the mortality which has prevailed in this Regiment in a very favourable light when viewed in relation to the published Statistics of the death-rate attaching to European Troops in India and in this Presidency.

Dr. Chevers in his valuable contribution* to the important subject, of Vital Statistics of European troops, gives tables of mortality for the three Presidencies in which he rates the *Hospital* mortality for this (the Madras) Presidency at 39 per 1,000 of strength.

He also cites the result of Col. Sykes' calculations (from the years 1825 to 1844 inclusive) 38·46 per 1,000; and Colonel Tulloch's (from 1836 to 1856,) 41·5 per 1,000.

The last quoted includes deaths *in* and *out of* Hospital.

The table at page 19 of Dr. Ewart's work† gives 38·8 per 1,000 as the death-rate for Madras from 1829 to 1852 exclusive of the years 1839-40 and 41.

Taking these and other tables given in the margin as a guide for comparison, the returns of the *2nd* E. L. I. present a favorable contrast; the death-rate for the period *in* Hospital being only 21·69 per 1,000 of strength and including deaths *in, out of,* and *in other* Hospitals, rising to 29·48 per 1,000; being lower by 17·31 per 1,000 (as relates to deaths *in* Hospital,) than is shown by Dr. Chevers' table; and by 12·02 per 1,000 than Colonel Tulloch's rates for deaths *in* and *out of* Hospital.

Ratio per 1000, of deaths to strength.	
Dr. Chevers	39·
Colonel Sykes	38·46
Colonel Tulloch	41·5
Dr. Eyre‡	35·1

Dr. Eyre does not state whether the death-rate given in his table includes deaths *out of* Hospital, but assuming that it does, the difference in favor of the *2nd* E. L. I. is 5·62 per 1,000, while if it represents deaths *in* Hospital only, then the difference is 13·4.

This may be exhibited in a table framed upon the plan of Dr. Ewart's first table.

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* "On the means of preserving the health of European Soldiers in India."

† Vital Statistics of the Armies in India.

‡ Statistics of 1st Madras Fusiliers from 1834 to 1850.

Table exhibiting the average rates of Sickness and Mortality amongst "Madras Troops" from 1829 *to* 1851-52, *in the "*1*st Madras European Regiment," and* 2*nd E. L. I. contrasted.*

Troops.	Periods.	Strength.	Admissions.	Deaths.	Ratio per centums.		
					Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
* Madras Troops..	{1829 to 1851-52}	213,587	363870	8301	170·36	3·88	2·28
† 1st Madras Fusiliers.....	1834 to 1850	14335	26504	540	171·01	3·51	2·15
2nd E. L. I.....	1840 to 1860	17703·71	30278	384	169·89	2·16	1·23

Dr. Eyre explains in a foot note that the Madras Fusiliers were not exposed to war during the period for which his table is framed. But on instituting a comparison so favorable to the 2nd E. L. I., it must be remembered that its returns embrace a decennial period *later* than pertains to the Fusiliers, and consequently enjoy larger advantages derived from more efficient sanitation and a more conservative treatment of disease; which we think may fairly be claimed as influencing the decreasing death-rate, which has been satisfactorily shown to mark the returns of our European forces of late years; and which is exhibited in the table just given in which the death-rate in the Fusiliers for 1849 to 1850 is 1·60 per cent. against 2·63 for the 5 years preceeding:— To recapitulate—*as regards deaths in Hospital both to strength and admissions, the per centage has been lower in*

* Ewart. † Eyre, Indian Annals, Vol. iii, part 2, page 671.

this Regiment (the 2nd E. L. I.) than is exhibited in any Mortuary returns for European troops, to which I have access, for the period observed.

The almost uniform ratio of "admissions" by disease to "strength" in the table just given is striking, and may be accepted as pretty satisfactory evidence that the diminished death-rate at the present day is really due to improved modes of practice combined with better care of the soldier and not to any greater immunity from disease itself.

It may be well to exhibit proof of this *decrease* of mortality in recent, as compared with more remote, periods.

EVIDENCE OF DECREASED MORTALITY.—Dr. Ewart shows that whereas from 1829 to 1839 the mortality in this (the Madras) Presidency, was 4·50 per cent., it fell from 1842 to 1851-52 to 3·20 per cent.

Dr. Eyre's table gives the mortality in the Fusiliers from 1839 to 1843 at 5·17 per cent.; in the next 5 years it fell to 2·63; and in the last 2 years 1849 and 1850 it was only 1·60.

The Sickness and Mortality in the 2nd E. L. I. arranged in quinquennial periods are as follows:—

Periods.	Strength.	Admissions by disease.	Deaths.	Ratio per cent of.			Stations.
				Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.	
1840 to 1844	4200·4	6466	100	153·9	2·38	1·54	Arnee 1 year. Bangalore 4 years.
1845 to 1849	4713	8835	115	187·4	2·44	1·30	Trichinopoly 5 years.
1850-51 to 1854-55	4628·8	8556	112	184·8	2·41	1·30	Secunderabad 4 years and 10 months.
1855-56 to 1859-60	3700·5	5754	50	155·4	1·35	·85	Madras, Sea. Tonghoo, Sea. Trichinopoly.

The first three periods give death-rates so nearly alike, as to be for all practical purposes identical; but in the fourth period it falls to the low figure of 1·35 per cent., a difference of 1·04 as contrasted with the most favourable of the three preceding quinquennial periods.

The table then does not show any very *progressive* decline of the death-rate, but does show a most satisfactory fall in the last quinquennial period, and, as before remarked, a very favourable *general* mortuary rate.

In the ratio of deaths to admissions we observe the same close approximation as regards the first three periods, and a great reduction in the third.

Neither is any progressive ratio observed in the "*admissions*" to "*strength*"—the first and last, and second and third periods, closely approximate.

But although the first and last periods are on a par as regards *admissions* to *strength*, the death-rate of the latter is, as we have already shown, 10·4 per 1,000 of strength *lower* than that pertaining to the first period; while in the ratio of *deaths* to *admissions* there is a reduction, of 6·8 per 1,000, a result we think, with Dr. Ewart, attributable to improved practice rather than to better sanitation. Not that I am disposed to admit that the *absence* of a *decreasing rate of admissions* is any evidence of neglect of those broad measures of sanitation which make up the sum of sanitary science, for due attention to those very circumstances would rather tend to *raise* the rate, more consideration being paid—on the principle that a "stitch in time saves nine"—to apparently slight ailments and to the first manifestations of the inroads of disease.

THE INFLUENCE OF "AGE" AND "SERVICE" UPON SICKNESS AND MORTALITY.—Enquiry has tended, as affirmed by many writers, to overthrow entirely the theory of acclimatisation—"advance of age (and length of service) increasing in a remarkable degree the tendency to death amongst European troops serving in India."*

I can question this proposition as relates to this Regiment for a period of 8 years only as the earlier tables do not give the *strength* under different ages and periods of service.

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* Ewart op. cit.

Table of Admissions and Deaths according to Age.

Years.	Age.													
	Under 20 years.		21 to 25		26 to 30		31 to 35		36 to 40		Above 40		Total.	
Strength.	1057		1442		1646		973		503		197		5818	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers	351	1	431	0	343	1	198	0	85	0	35	0	1443	2
Cholera	5	1	6	1	6	1	7	1	4	1	0	0	28	5
Dysentery	171	1	221	3	186	3	107	3	54	1	15	2	754	13
Diarrhœa	118	1	92	0	68	1	67	0	16	1	12	0	373	3
Other diseases of Stomach and Bowels	161	1	200	0	177	1	126	2	75	0	21	0	760	4
Disease of Lungs	115	3	103	2	126	3	123	3	45	2	13	0	525	13
Do. Brain	66	3	112	1	172	2	150	3	63	2	15	0	578	11
Rheumatic affections	59	0	115	2	145	1	131	0	52	0	26	0	528	3
Hepatitis	23	1	60	2	83	1	57	1	27	0	7	0	257	5
Venereal disease	469	0	420	0	258	0	149	1	38	0	13	0	1347	1
Dropsies	1	0	4	2	5	3	7	3	0	0	0	0	17	8
All other diseases	573	2	629	0	589	5	504	2	204	3	61	0	2560	12
Total	2112	14	2393	13	2158	22	1626	19	663	10	218	2	9176	80
Ratio per 1,000 admissions and deaths to strength	1998·10	13·24	1659·5	9·15	1311·05	13·30	1671·12	19·53	1318·9	19·88	1106·59	10·15	1576·14	13·76

Table of Admissions and Deaths according to Service.

YEARS.	SERVICE.																	
	Under 1 year.		1 to 3		3 to 5		5 to 7		7 to 10		10 to 15		15 to 20		Above 20		Total.	
STRENGTH.	590		676		698		661		448		1791		924		30		5818	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers	206	0	197	0	158	1	184	0	190	0	343	1	146	0	19	0	1443	2
Cholera	5	0	3	0	4	2	2	0	3	0	3	2	8	1	0	0	28	5
Dysentery	79	1	115	2	72	2	80	0	108	1	213	2	87	5	0	0	754	13
Diarrhœa	78	1	64	0	28	0	38	0	47	1	69	1	48	0	1	0	373	3
Other diseases of Stomach and Bowels	91	0	89	0	72	0	83	1	97	0	172	2	149	1	7	0	760	4
Disease of Lungs	41	0	59	3	50	1	50	2	77	2	159	5	89	0	0	0	525	13
Do. Brain	39	2	45	1	34	1	71	0	74	0	218	2	76	3	21	2	578	11
Rheumatic affections	29	0	65	2	39	0	72	0	57	0	167	0	97	1	2	0	528	3
Hepatitis	12	0	22	0	19	2	33	0	38	1	77	2	54	0	2	0	257	5
Venereal disease	188	0	314	0	183	0	205	0	174	0	224	0	53	1	6	0	1347	1
Dropsies	0	0	0	0	4	1	2	1	3	2	6	2	2	2	0	0	17	8
All other diseases	355	2	285	0	285	0	313	1	311	0	655	3	332	6	24	0	2560	12
Total	1123	6	1258	8	948	10	1133	5	1179	7	2306	22	1141	20	82	2	9170	80
Ratio per 1,000 admissions and deaths to strength	1903·38	10·16	1860·9	11·83	1358·17	14·32	1714·06	7·56	2631·7	15·62	1287·5	12·28	1234·8	21·64	2733·3	66·6	1576·14	13·76

By this table the highest mortality is met with at the period from 31 to 35 years of age (19·53 per 1,000), and from 36 to 40 years (19·88); above 40 years it is 10·15, under 20 it is 13·24, and between the ages of 21 and 25 it is at its minimum (9·15).

No *regularly progressive* rate then is observable, but mortality, with the one exception above noted, may certainly be said "to increase with advancing years" up to 40 years' of age, but not beyond it, for after 40 the death-rate falls.

But the strength at that age is only 197, and moreover is probably made up largely of staff sergeants and non-commissioned officers whose sanitary relations differ from those influencing the rank and file.

If we turn to the "*service*" table we find, at the two extremes of the scale, that the mortuary rate is illustrated by (the ratio per 1,000 of strength) the figures 10·16 and 66·6!

No *progressive* rate is even here witnessed, but it fluctuates between the extremes, though shewing a decided tendency to rise towards the end of the table.

Admissions to *strength* in the *age* table exhibit the highest ratio under 20 years of age, being within a fraction of 200 per cent.; while the lowest rate is found above 40 years of age, 110·6 per cent. From 20 up to 30 years of age the ratio diminishes, rising again between 30 and 35, falling in the next quinquennial period and reaching its minimum "above 40."

In the *service* table the figures at the extremes of the series are 1903·38 and 2733·3. In the intermediate columns the ratios fluctuate so much that no satisfactory conclusions can be drawn.

Dr. Ewart's steadily *progressive* rates are *not* exhibited in either table.

The *service* table is the most trustworthy and certainly to some extent supports the proposition at the commencement of this section.

Influence of Seasons upon Sickness and Mortality.—The data upon which to determine *the influence of seasons* upon health are equally scanty.

A table for 7 months of the 1st Quarters of 7 successive years, and 8 months of the other quarters is all I can frame, as prior to 1853-54, although *admissions* for every month

of the year are recorded, *deaths* are not so rendered but massed under a single column, "died."

Table of Admissions and Deaths for each month of the year for 8 *years from* 1853-54 *to* 1860.

Months.	Number of months.	Aggregate Strength.	Admissions.	Deaths.	Ratio per 1,000.					
					Monthly.		Quarterly.		Half-yearly.	
					Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
January	7	4722	517	4	109·4	·84				
February	7	4649	577	4	137·	·86	122·8	·63		
March	7	4856	654	1	138·8	·20			143·7	1·05
April	8	6145	975	7	158·6	1·14				
May	8	6370	1016	11	159·5	1·73	159·4	1·37		
June	8	6343	1016	8	160·17	1·26				
July	8	6042	1015	11	167·9	1·82				
August	8	5811	917	9	157·8	1·53	155·	1·44		
September	8	5432	748	5	137·5	·92				
October	8	5400	756	11	140·	2·03			144·3	1·31
November	8	5392	706	3	121·4	·55	132·7	1·21		
December	8	5321	678	6	127·4	1·12				

By this table the *admissions increase* in ratio to strength from January to July, falling again towards the close of the year. The highest ratio is found in July and the lowest in January.

The highest rate of *mortality* occurs in *October* and the lowest in *March*. The rainy months of July and August exhibit the highest averages of any two consecutive months. Examined by *Quarterly* periods the results are as follows :—

Ratio per 1,000 *of Aggregate Strength.*

	Admitted.	Died.
1st Quarter	122·8	0·63
2nd do.	159·4	1·37
3rd do.	155·	1·44
4th do.	132·7	1·21

The second and third quarters, or the months from April to September inclusive, give the highest rates of both admissions and deaths.

Half-yearly analysis gives the following figures.

1st Half-Year	143·7	1·05
2nd do.	144·3	1·31

Again if we take the six *dry* against the six *wet* months

we have respectively 137·7 (admissions) and 0·84 (deaths) and 149·8 and 1·36. The *wet* months then have been decidedly more inimical to health than the *dry*.

This may perhaps be brought out better by dividing the seasons into *Cold, Hot, and Wet*.

Per 1,000 *of Aggregate Strength.*

	Admitted.	Died.
Cold Season	..... 118·4	..... 0·84
Hot do.	..... 154·4	..... 1·13
Wet do.	..... 151·4	..... 1·58

The *cold* season then has both the lowest rate of admissions and deaths. The *hot* season has the *highest* rate of *admissions* with an *increasing* death-rate, while the largest mortality takes place in the *wet* months.

This is not in accordance with Dr. Ewart's deductions, who assigns (in Bengal) the highest mortality to the *cold* months.

Mr. Waring's tables upon the effect of seasons upon *fevers* give prominence to the rainy season.

Dysentery by the same author does not appear to be much influenced by seasons but to leave towards the cold season. The tables last alluded to are framed for Bombay.

Taking disease in the aggregate it is evident that in this Regiment, and for the period alluded to in, or embraced by, the tables framed, admissions and deaths have both been highest in the rainy months or from July to October inclusive, and this quite agrees with remarks made in the Annual Report for 1861-62.

STATISTICS OF INVALIDING.

INVALIDING.—The important item of annual decrement to the strength of a Regiment understood generally by the term *invaliding*, it is not, as relates to the returns of this Regiment, possible to deal with satisfactorily.

Not only are discrepancies found to exist between the *returns* and *reports* but the diseases or disqualifications for which men have been "invalided,"—and this term in the returns is restricted to those men transferred to the *invalid* or *veteran companies*—have not as a rule been given.

In the case of men "*discharged*" or "*pensioned*" on "*account of disease,*" nominal rolls generally accompany the annual returns and reports.

In attempting then to exhibit the diseases which have most contributed to invaliding, I find it necessary to restrict the inquiry to "discharged" and "pensioned" for disease.

Out of 154 "discharges," I am able to frame a table of 144 cases only, as I have not, at the time I write, access to the returns for 1859-60 and 1860.

These 144 diseases are thus distributed.

Nervous System.					
Mania	6	or per cent. of the whole...	4·16		
Epilepsy	7	,, ,,	4·86		
Paralysis	2	,, ,,	1·39		
Neuralgia	1	,, ,,	·69	22·2	
Chronic Ebrietas	10	,, ,,	6·94		
Excessive use of Tobacco	3	,, ,,	2·08		
Headache	3	,, ,,	2·08		
Respiratory System.					
Pneumonia Asthma	5	,, ,,	3·47	4·86	
Dyspnœa	2	,, ,,	1·39		
Circulating System.					
Carditis	34	,, ,,	23·61		
Diseases of Ear	4	,, ,,	2·77		
,, Eye	10	,, ,,	6·94		
Wounds and Injuries	7	,, ,,	4·86		
Stricture of Urethra & Diseases of Urinary Organs	5	,, ,,	3·46		
Venereal Diseases	2	,, ,,	1·39		
Rheumatic Affections	12	,, ,,	8·33		
Hepatitis	1	,, ,,	·69		
Dyspepsia	1	,, ,,	·69		
Splenitis	1	,, ,,	·69		
Bowel Complaints	2	,, ,,	1·39		
Hernia	12	,, ,,	8·33		
Hip Joint Disease	1	,, ,,	·69		
Stuttering	1	,, ,,	.69		
Scrofula	8	,, ,,	5·55		
Varix	1	,, ,,	·69		
Bubo	1	,, ,,	·69		
Atrophia	1	,, ,,	·69		
Ulcers	1	,, ,,	·69		

The very small number of discharges on account of purely *tropical* disease will not escape notice. *Hepatitis* is represented by 0·69 per cent. or 6·9 per 1,000. *Dysentery* finds no place in the table. The two discharges under "Bowel Complaints" are for diarrhœa 1·39 per cent.

By Dr. Chever's tables for Madras "Hepatitis" holds the ratio of 143·2 per 1,000 to all invalided, and by Dr. H. Macpherson's for Bengal 74 per 1,000, while by the same tables "Bowel Complaints" are represented by 47·4 and 93·5 per 1,000 respectively.

It is probable that the majority of cases of Chronic Hepatic Affections and Bowel Complaints disqualifying for further

service, occurred in this Regiment amongst old soldiers who had served for "the invalids" or for "pension," and, as has been before remarked, no nominal lists of these transfers are found in the returns.

Statistics with which to compare the above figures are scanty. The following table may be consulted, but the comparison is an unsatisfactory one for the reasons above given, viz., that the table for this Regiment does not really represent the entire *invaliding* of the corps, but merely one element of it, viz., "*discharges* on account of disease."

Sources of Information.	Ratio per 1,000 to all Invalided.			
	2d E. L. I.	Madras Troops (Chevers)	Bengal Troops (Dr. H. Macpherson.)	(Indian Army Statistical Reports, 1860).
Numbers invalided.	144	2157	2052	642
Mania	41·6	21·8	35·5	63·8
Epilepsy	48·6	22·7	19·5	48·2
Neuralgia	6·9	None	None	None
Paralysis and Apoplexy	13·9	37·0	20·9	23·3
Headache	20·8	14·8	None	None
Disease of Respiratory Organs	48·6	93·2	65·3	165·2
Cardiac Diseases	236·1	None*	34·6	65·4
Hepatic Diseases	6·9	143·2	74·	38·9
Bowel Complaints	13·9	47·4	93·5	
Other diseases of Abdominal Organs	13·8	None	27·3	None†
Rheumatic Affections	83·3	193·7	142·7	79·
Debility, Atrophy, &c.	6·9	155·7	146·6	143·6
Wounds and Injuries	48·6	89·0	55·1	56·2
Fevers	None	31·	35·	None
Venereal Diseases	20·8	35·2	23·4	46·5
Hernia	83·3	24·6	16·5	12·4
Diseases of Urinary Organs	34·6	None	14·1	17·1
Scrofula	55·5	14·8	14·1	23·2
Diseases of Eye	69·4	33·3	88·7	133·9
„ of Ear	27·7	8·8	None	29·6
„ of Bones and Joints.	None	None	19·9	None
Varix	6·9	16·2	None	37·7
Ulcers	6·9	13·9	do.	
Hæmorrhoids	None	6·5	do.	None

* Probably massed under "Thoracic Diseases."

† Do. do. do. Bowel Complaints.

In commenting upon the widely differing ratios existing in this table, and especially the small number of discharges in this Regiment from tropical diseases, compared with those exhibited in the columns devoted to other sources, the fact that the latter are probably derived from the records of H. M.'s British forces must not be lost sight of.

Amongst Queen's troops, till very recent periods every man who left India, whether recommended for "discharge," to be invalided, or for change of climate, was returned as invalided, whereas, as already explained, that term, amongst Company's troops, applied only to men transferred to the Veteran or Invalid Companies in India, and as such transfers in the large majority of instances were made *out of hospital*, the diseases which lead to them are not shown in the returns.

The very large proportion of discharges from this Regiment for Cardiac affections (236·1 per 1,000) will not escape notice. At one period of the Regiment's history there appears to have been a great prevalence of such diseases, and I believe the extensive invaliding on account of them, attracted the attention of the home authorities. It is out of all proportion to that shown by other returns quoted in the table. The rate per 1,000 amongst 642 soldiers invalided in England from India in 1860 is 65·4, while in Bengal, by Dr. H. Macpherson's tables, it is 34·6.

In regard to discharges for "Debility," "Atrophy," "Cachexia," "Worn-out," &c.; and in explanation of the exceedingly low ratio exhibited by the returns for this Regiment, the same fact must be averted to, viz., that the class of men included in the returns are all of short service—men who had not completed the "service" giving them admission into the ranks of the Invalid or Veteran Companies, and which absorbed all that class of soldiers whose disqualifications would find expression in the terms "Atrophy," "Debility," "Worn-out," &c.

The high ratio which invaliding by "Pulmonary disease" (165·2 per 1,000) holds in the Army Medical Returns for 1860 is worthy of note and supports some remarks, which will be found under the statistics of diseases of the Respiratory

organs in another part of this paper, and which remarks were penned before I took up the subject now under consideration.

By the more recent returns also diseases of the eye are shown to lead to more extensive invaliding than formerly, which is doubtless due to the requirements of the new rifle, which demands a greater measure of integrity of sight than the old "brown Bess."

It has elsewhere been shown that the average rate of decrement by invaliding (including, that is, men transferred to the Veteran Companies, *numerical* returns of which are extant) has in this Regiment been 22·65 per 1,000 of strength, a rate very closely approximating to that which various statisticians have computed for the Madras Army.

Thus Dr. Chevers gives (upon the faith of Col. Sykes' tables) 20·76 as the rate amongst European *Company's* troops for this Presidency from 1844 to 1852. In Bombay for the same period it reached 31·60, and in Bengal 36·0 per 1,000 of strength.

Our statistics of invaliding are not very trustworthy, but under the new system of invaliding only in England, they will become reliable. Those compiled from the Army Medical Returns for 1860, give much lower averages than we have hitherto accepted. For instance the rate for the three Presidencies is stated at 9·96 per 1,000 of strength. The extremes being 20·42 for Bombay and 7·46 for Bengal, Madras holding the intermediate rate of 8·27. This is exclusive of the Artillery, the invaliding from which was at the rate of 11·61 per 1,000 of strength.

The table referred to includes, however, only men actually invalided, at Chatham and Woolwich, during the year, and does not refer to or include men sent home for "change of climate," many of whom will rejoin their Regiments, but who, under the old system, would (I believe) have been returned as invalided.

Age and Service of Invalids.—The *age* and *service* of

147 discharges by disease in this Regiment is given in the following table :—

CLASSES OF DISEASE.	Age (Years).						Service (Years).					
	under 20.	21 to 25	26 to 30	31 to 35	36 to 40	above 40.	under 1.	1 to 5	6 to 10	11 to 15	16 to 20	above 20.
Diseases of Brain, &c.	2	8	7	4	4	0	0	11	6	8	0	0
,, of Respiratory System	0	2	3	0	0	0	0	4	1	0	0	0
,, Circulatory do	0	14	16	2	2	0	0	16	18	0	0	0
Hepatic Diseases	0	0	0	0	1	0	0	0	0	0	†1	0
Bowel Complaints	0	1	0	0	1	0	0	1	0	1	0	0
Other Diseases of Abdominal Viscera	0	2	1	0	0	0	0	1	2	0	0	0
Rheumatic Affections	0	4	3	2	1	0	0	4	3	3	0	0
Atrophy, Debility, &c	0	0	3	1	1	1	0	1	2	2	1	0
Wounds and Injuries	0	5	3	0	0	0	0	6	2	0	0	0
Venereal Diseases	0	0	3	0	0	0	0	0	3	0	0	0
Hernia	1	4	3	2	1	0	1	1	7	2	0	0
Diseases of the Urinary Organs	0	0	4	0	0	0	0	1	2	1	0	0
Scrofula	0	2	4	2	1	0	0	2	4	*3	0	0
Diseases of Eye	0	5	6	0	0	0	0	7	4	0	0	0
,, of Ear	0	1	1	0	0	1	0	0	2	0	1	0
Varix and Ulcers	0	0	1	1	0	0	0	0	2	0	0	0
Stuttering	0	0	0	1	0	0	0	0	1	0	0	0
Unknown	0	5	3	1	0	0	1	7	0	1	0	0
Total...	3	53	61	16	12	2	2	62	59	21	3	0
Ratio per 1,000 to all Discharges, &c.	20·40	360·5	414·9	108·8	81·8	13·6	13·6	421·8	401·3	143·9	20·4	0

It is scarcely profitable to comment upon this table. The largest number of discharges took place between the ages of 26 and 30, and from the 1st to the 5th year of service, though in the next quinquennial "service" period, the rate is but little diminished. After 30 years of age and 10 years of service, discharges are less numerous; but this naturally follows as men who have completed 10 years of service hold on as long as they can, to complete the period entitling them to pension, or to the "Invalid" establishment; so that the reduction in the rate of invaliding after 10 years service cannot I think be advanced in support of the doctrine of "acclimatisation."

* One Invalided. † Invalided.

CAUSES OF MORTALITY AS ILLUSTRATED AND CORRECTED BY THE AUTOPSY REPORTS.—It is necessary to revert to mortality or rather to the *diseases* which have contributed to swell the mortality of the Regiment.

A careful scrutiny of the autopsy reports establishes, that the true causes of death are not in every instance stated, and consequently that in calculating the ratio per centum which specific diseases bear to the total mortality, it becomes necessary to assign the true causes of death as far as it may be possible to do so.

I havet herefore compiled a table shewing in two columns—1st, the mortality and causes of death as recorded in the annual reports and returns, and 2ndly, as illustrated or corrected by the autopsy reports; a column of remarks being added to explain the grounds upon which I have ventured, in some instances, to assign other diseases than those entered in the "returns" as the true causes of death.

The result will, I think, prove that no apology need be offered, for the liberty taken with the mortuary returns.

Table of diseases from which mortality has resulted, as compiled from the returns (A), and as corrected or elucidated by the Autopsy reports (B).

Classes and orders of disease.	Deaths. A.	Deaths. B.	Remarks explanatory of discrepancies between the two tables or elucidative of the cause of deaths.
CLASS I. ZYMOTIC. Order 1, *Miasmatic.*			
Fevers. ...	30	23	Removed from Fevers 7—viz., Died of Cholera 1, Hepatic Abscess 2. Disease of Heart 1, Cerebral Abscess 1, Renal disease 1, Dropsy with Mesenteric disease 1.
Eruptive do. ...	1	1	
Dysentery. ...	134	150	16 cases of Diarrhœa transferred to Dysentery.
Diarrhœa ...	27	9	Do. also 1 to Phthisis, & 1 to Cholera.
Cholera.. ...	57	60	Admitted from Fever 1, Catarrhus 1, Diarrhœa 1.
Cynanche Tonsillitis. ..	1	0	Transferred to Phthisis.
Rheumatism ...	2	0	Transferred to Carditis 1, Encephalitis 1.

Classes and orders of disease.	Deaths. A.	Deaths. B.	Remarks explanatory of discrepancies between the two tables or elucidative of the cause of deaths.
Order 2, *Anthetic.*			
Syphilis ...	6	4	Two of the 6 cases not found in autopsy reports—of the other four, 1 was a case of Morbus Brightii, 1 died from Bubo opening into the peritoneal cavity, 1 from Dysentery and Cirrhosis of liver, 1 Tubercular abscess in liver.
Bubo ...	1	0	Not found in autopsy reports.
Order 3, *Dietic.*			
Ebriositas ...	2	0	Not found 1, 1 transferred to Hepatitis.
CLASS II. CONSTITUTIONAL.			
Order 1, *Diathetic.*			
Anasarca ...	6	5	1 "not examined," 1 transferred to Carditis. In the 4 other cases disease of the kidneys existed; 4 therefore were Renal and 1 Cardiac dropsies.
Order 2, *Tubercular.*			
Scrofula. ...	3	1	2 transferred to Phthisis.
Phthisis. ..	8	19	1 case of Diarrhœa, 2 Scrofula, 2 Hæmoptysis, 1 Asthma, 1 Cynanche, 1 Bronchitis, 3 Catarrhus transferred to Phthisis.
Hæmoptysis ...	3	1	
CLASS III. LOCAL DISEASES.			
Order 1, *Nervous System.*			
Apoplexia ..	15	15	5 not examined.
Cephalalgia ...	1	0	Transferred to Encephalitis.
Encephalitis ...	0	5	Transferred from Fever 1, Cephalalgia 1, Rheumatism 1, Convulsio 1, Obstipatio 1.
Convulsio ...	1	0	Transferred to Encephalitis.
Paralysis ...	4	4	
Otitis ...	1	1	Disease of Ear extending to Brain.
Order 2, *Circulating System.*			
Carditis ...	8	14	Transferred from Fever 1, Rheumatism 1, Ulcus 1, Palpitatio 1, Ascites 2, Anasarca 1, removed to Pleuritis 1.

Classes and orders of disease.	Deaths. A.	Deaths. B.	Remarks explanatory of discrepancies between the two tables or elucidative of the cause of deaths.
Angina Pectoris...	1	1	Adherent Pericardium.
Aneurism. ...	2	6	4 cases transferred from "Catarrhus," (5 cases rupture of thoracic, and 1 of abdominal aorta.)
Palpitatio ...	1	0	Transferred to Carditis.
Order 3, *Respiratory System.*			
Asthma ...	1	0	Transferred to Phthisis.
Bronchitis ...	12	2	Transferred to Phthisis 4, Aneurism 4, Cholera 1, Pneumonia 1.
Pneumonia ...	4	5	Transferred to Pleuritis 1, admitted from Hepatitis 1, Catarrhus 1.
Dyspnœa cont. ...	1	1	
Hydro-thorax ...	2	2	
Pleuritis ...	1	2	Transferred to Hepatitis 1, admitted from Pneumonia 1, Carditis 1.
Order 4, *Digestive System.*			
Peritonitis ...	2	3	1 admitted from Enteritis.
Gastritis ...	2	1	Transferred to Hepatitis 1.
Enteritis ...	1	0	Transferred to Peritonitis.
Obstipatio ...	3	0	Transferred to Hepatitis 2, Encephalitis 1.
Dyspepsia ...	2	0	Transferred to Hepatitis 2.
Hæmatemesis ...	1	1	Cirrhosis of Liver with enlarged Spleen.
Hæmorrhois ...	1	1	Not recorded.
Hernia ...	1	1	Strangulated and operated upon.
Hepatitis ...	21	29	Added 9, viz., from Fever 2, Obstipatio 2, Dyspepsia 2, Ebrietas 1, Gastritis 1, Pleuritis 1; Transferred to Pneumonia 1.
Icterus ...	1	1	Cause of death not apparent by autopsy record.
Ascites ...	3	2	Admitted from Fever 1, Transferred to Carditis 2; of the remaining 2, 1 not found upon autopsy reports, the other associated with mesenteric disease.
CLASS IV. DEVELOPMENTAL.			
Atrophia, Cachexia	1	1	

Classes and orders of disease.	Deaths. A.	Deaths. B.	Remarks explanatory of discrepancies between the two tables or elucidative of the cause of deaths.
CLASS V. VIOLENCE, &c.			
Insolatio ...	6	6	
Vulnus ...	1	1	Rupture of Bladder.
CLASS VI. INTEGUMENTARY.			
Ulcers ...	2	1	1 removed to disease of Circulatory System.
Phlegmon ...	1	1	
Abscess in Perinæo	1	1	
NOT CLASSED.			
Beriberi ...	2	2	1 "not examined."
Total...	388	383	

Three cases of "Phthisis" and one "Convulsio" are found upon the autopsy reports, not accounted for in the tabular returns, hence the discrepancy between the numbers shown in the column A, and the number of deaths already given as 384. Again, five cases are not found in the autopsy reports, which are entered in the returns, viz., two fatal cases of Consecutive Syphilis, one of Bubo, one of Ebrietas and one of Ascites.

The causes of death then, as traced by the Necrological reports, can be given with very considerable accuracy in 383 instances.

I do not say, that the table I have framed is not open even now to objection, but it certainly exhibits greater truth, or a closer approximation to it, as relates to the diseases and classes of disease from which mortality has resulted, than is shown by the annual returns.

The following table exhibits the ratio per 1,000 which

each disease, order, and class of diseases bears to the total mortality.

Diseases, &c.	No. of deaths.	Ratio per 1,000.		
		Specific diseases.	Orders.	Classes.
CLASS I.				
ZYMOTIC.				
Order *Miasmatic.*				
Fevers	23	60·		
Eruptive do.	1	2·6		
Dysentery	150	391·6	634·4	
Diarrhœa	9	23·5		
Cholera	60	156·8		644·8
Order 2. *Enthetic.*				
Syphilitic	4	10·4	10·4	
CLASS II.				
CONSTITUTIONAL.				
Order 1. *Diathetic.*				
Anasarca	5	13·0	13·0	
Order 2. *Tubercular.*				67·8
Scrofula	1	2·6		
Phthisis	19	49·6	54·8	
Hæmoptysis	1	2·6		
CLASS III.				
LOCAL DISEASES.				
Order 1. *Nervous.*				
Apoplexy	15	39·1		
Encephalitis	5	13·0		
Paralysis	4	10·4	80·9	
Insolatio	6	15·7		
Otitis	1	2·6		
Order 2. *Circulating.*				
Carditis	14	36·5		
Angina Pectoris	1	2·6	54·8	
Aneurism	6	15·7		271·4
Order 3. *Respiratory.*				
Bronchitis	2	5·2		
Dyspnœa Cont	1	2·6		
Pleuritis	2	5·2	31·3	
Pneumonia	5	13·		
Hydrothorax	2	5·2		

Diseases, &c.	No. of deaths.	Ratio per 1,000.		
		Specific diseases.	Orders.	Classes.
Order 4. *Digestive.*				
Peritonitis	3	7·8	104·4	271·4
Gastritis	1	2·6		
Hæmatemesis	1	2·6		
Hæmorrhois	1	2·6		
Hernia	1	2·6		
Hepatitis	29	78·3		
Icterus	1	2·6		
Ascites	2	5·2		
CLASS IV. DEVELOPMENTAL.				
Order 4. *Atrophia.*				
Atrophia	1	2·6	2·6	2·6
CLASS V. VIOLENCE, &c.				
Vulnus	1	2·6	2·6	2·6
CLASS VI. INTEGUMENTAL.				
Ulcus	1	2·6	7·8	7·8
Phlegmon	1	2·6		
Abscess in Perinæo	1	2·6		
NOT CLASSED.				
Beriberi	2	5·2	5·2	5·2

In this table I have taken a liberty with "Insolatio," removing it from class V, *Violence* and *Accident*, to class III, order 1, *Nervous system*, and for this reason. In the earlier returns all cases of sun-stroke or heat asphyxia were classed under *Apoplexy*, while more recently apoplexy is scarcely found in the returns, but insolatio or ictus solis is common. The two terms then, *apoplexy* and *insolatio*, I believe to refer to the same class of cases, and I have therefore included them all under diseases of the nervous system, though I admit that the arrangement is open to objection.

The table, then, though still imperfect, exhibits the share which each disease and class of diseases, has had in the aggregate mortality. It is difficult to assign to some of the cases, such as *Atrophy*, *Cachexia*, and *Dropsical cases*, with their varied organic visceral complications, any defined position, while the table equally illustrates the difficulty of dealing with returns as usually rendered, which often fail to show the true causes of mortality; either from inadvertance in not changing the entry of the disease in the admission and discharge book, or from the acknowledged difficulty in assigning many cases to any particular class or order, and in some cases from errors in diagnosis to which we are all liable.

DEATHS OUT OF HOSPITAL.—My attempt to trace the 138 deaths *out of* hospital, which include all sudden and accidental deaths, whether at Head Quarters or elsewhere, deaths on sick leave, &c., has been successful as relates to 92 men only.

In the earlier records, nominal lists of men dying absent from the corps are not given, and I question whether under the old system all deaths under such circumstances were communicated to the Medical Officer and returned, even in later periods.

In numerous instances the cause of death is not entered, or the entry "unknown" made, although the *place* of death is duly noted.

Such casualties were not in fact reported to the Medical Officer, but only to the Officer Commanding the Regiment, were *Military* rather than *Medical* returns, and any information the Medical Officer might obtain regarding these casualties was derived from the Orderly room.

The causes of death in 92 instances are recorded as follows:—

Apoplexy	9	Catarrhus	2	Died Drunk	2
Paralysis	2	Hæmoptysis	1	Rupture of Bladder.	1
Mania	2	Phthisis	8	Death by "a fall".	1
Epilepsy	1				
Ictus Solis	2				
		Heart Disease	3		
Hepatitis	7	Aneurism	3	Cholera	15
				Scrofula	1
Dysentery	9			Small-pox	1
Diarrhœa	6	Suicide	6	Dropsy	1
		Drowned	8	Bubo	1

Arranged in a tabular form and in accordance with the new nosology, the ratio which each disease or class of diseases bear to the aggregate mortality is thus expressed.

Diseases, &c.	No. of deaths.	Ratio per 1,000.		
		Specific Diseases.	Orders.	Classes.
CLASS I.				
Order 1.				
Small-pox	1	10·8	336·9	348·2
Dysentery	9	163·04		
Diarrhœa	6			
Cholera	15	163·04		
Order 2.				
Bubo	1	10·8	10·8	
CLASS II.				
Order 1.				
Dropsy	1	10·8	10·8	119·5
Order 2.				
Scrofula	1	10·8	108·7	
Phthisis	8	86·9		
Hæmoptysis	1	10·8		
CLASS III.				
Order 1.				
Apoplexy	9	97·8	152·1	315·08
Paralysis	2	21·7		
Mania	2	21·7		
Epilepsy	1	10·8		
Order 2.				
Carditis	3	32·6	65·2	
Aneurism	3	32·6		
Order 3.				
Catarrhus	2	21·7	21·7	
Order 4.				
Hepatitis	7	76·08	76·08	

Diseases, &c.	No. of deaths.	Ratio per 1,000.		
		Specific diseases.	Orders.	Classes.
CLASS V.				
Order 1.				
Ictus Solis	2	21·7	152·1	217·3
Drowned	8	86·9		
Died drunk	2	21·7		
Rupture of Bladder by a fall	1	10·8		
Died from a fall	1	10·8		
Order 4.				
Suicide	6	65·2	65·2	

I think that a liberty might safely be taken with this table by adding "Catarrhus" to the order of "Tubercular" disease; for I have already shown that on tracing the *hospital* deaths recorded under *Catarrhus* and *Bronchitis*, two only were allowed to stand, the other instances being deaths by Phthisis, Aneurism, &c.

But without further alteration we have 475 deaths, pretty accurately traced to their true causes, viz., 383 *in* and 92 *out of hospital*; of these 475 deaths,

274	or 576·84	per 1,000	are assignable to	Miasmatic Disease.
5	„ 10·54	„	„	„ Enthetic do.
6	„ 12·64	„	„	„ Diathetic do.
31	„ 65·27	„	„	„ Tubercular do.
47	„ 98·86	„	„	„ Diseases of Nervous System.
27	„ 56·85	„	„	„ Circulating do.
14	„ 29·48	„	„	„ Respiratory do.
46	„ 96·85	„	„	„ Digestive do.
1	„ 2·11	„	„	„ Developmental do.
13	„ 27·38	„	„	„ Violence & Accident.
6	„ 12·64	„	„	„ Suicide.
3	„ 6·32	„	„	„ Abscess, Ulcers, &c.
2	„ 4·22	„	„	„ Beriberi.
Total 475	1000·00			

Statistics of the principal Diseases or Classes of Disease.

CLASS 1ST, ZYMOTIC. ORDER 1ST, MIASMATIC.

Fevers.

Aggregate strength for the period		17,703·71
Admissions by Fevers		4991
Deaths in Hospitals		30
Of mean strength per 1,000	Admitted by Fevers	281·3
	Deaths to "Strength"	1·60
	Deaths to "Admissions"	6·01

Dr. Ewart's table for this Presidency is placed in juxta position with the above.

Troops.	Periods.	Strength.	Admissions.	Deaths.	Ratio per cent. of		
					Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
Madras troops*	1829 to 1851	213,587	67,543	808	31·62	0·37	1·19
2nd E. L. I.	1840 to 1860	17703·71	4,991	30	28·13	0·160	0·601

The comparison is favourable to this Regiment.

But this class of diseases may be further examined in relation to the question of decrease either as regards prevalence or mortality.

To this end a table arranged for quinquennial periods is framed.

Periods and Strength.	1840-44 4200·4	1845-49 4713	1850-51 to 1854-55 4628·8	1855-56 to 1859-60 3700·5	1860 10 months. 460·7
Admissions	408	2308	1279	885	111
Deaths	5	21	2	2	0
Ratio per cent. of Admissions	9·71	48·97	27·63	23·92	24·09
Ratio of Deaths to Strength	0·119	0·44	0·043	0·054	0
Ratio of Deaths to Admissions	1·22	0·90	0·15	0·22	0

* Ewart op. cit.

There is little relation to be traced here between the ratios of "admissions" and "deaths" as regards any *progressively diminishing "prevalence" or mortality.* For while we find a very considerable *increase* of admissions in the second period, there is, as regards deaths to admissions, a diminished death-rate. Again, while the ratios of admissions in the two following quinquennial periods, as well as the ratios of deaths to strength, vary but little, a still diminishing ratio of deaths to admissions is exhibited.

It may be remarked that these quinquennial periods, also exhibit very closely the admissions and deaths at different *stations.*

The first period of five years for instance contain the admissions, &c., by fevers at *Bangalore* for four years; the whole of the second period was passed at *Trichinopoly,* and the third at *Secunderabad;* so that the table shows very closely to what extent the admissions by this class of diseases have been influenced by *stations* and *climate.* At Bangalore where the "*admissions*" to "*strength*" are *lowest,* the "*deaths*" to "*admissions*" are *highest.* The death-rate for the whole period is very low, being only 0·164 per cent., or 1·64 per 1,000 of strength, while the "deaths" to "admissions" exhibit a decreasing ratio from 12·2 per 1,000 in the first period (Arnee and Bangalore), to 9·0 per 1,000 (Trichinopoly), 1·5 per 1,000 (Secunderabad), rising in the last period to 2·2 per 1,000 (Madras, Tonghoo, Trichinopoly.)

Subjecting "fevers" to sub-division into their respective types they stand thus :—

Ephemeral Fevers		...	1827	cases with	6	deaths
Quotidian Intermittent Fevers.		...	2350	,, ,,	5	,,
Tertian	do.	...	229	,, ,,	0	,,
Quartan	do.	...	2	,, ,,	0	,,
Remittent	do.	...	396	,, ,,	8	,,
Continued	do.	...	187	,, ,,	11	,,
		Total...	4991	....	30	

Before we can assign the true mortuary rates attaching to these different types of fevers, it is manifest that the fatal cases must be examined. To this end I have searched the "post mortem" reports, in which I find 27 cases recorded, of which 8 were not subjected to examination—viz., 5 of remittent, 2 of continued, and 1 of ephemeral fever.

The causes of death, as indicated by the lesions noted in the autopsy reports, stand as follows :—

Ephemeral form 5 cases.
- Hepatic Abscess & Peritonitis 1
- Died of Cholera 1
- Valvular disease of Heart ... 1
- No special lesions, or such as might exist in fever only... 2-5

Common Continued Fefer 9 cases.
- *Ulceration* of *small Intestines.* 2
- Abscess of Cerebellum. .. 1
- Abscess of Liver and Ulceration of large bowel. ... 1
- Purulent effusion at base of brain 1
- No special lesion, or such only as might exist in fever ... 4-9

Remittent Fever 2 cases.
- *Large ulcers* in *small Intestines* 1
- Enlarged Liver and Abscess in left Kidney. 1-2

Intermittent Fever 3 cases,
- Dropsy with Tubercular disease of Mesenteric glands... 1
- *Ulceration* of *small Intestines* 1
- Tubercular disease of Lungs. 1-3

I shall not, I trust, lay myself open to an imputation of reflecting upon diagnosis if I remove 7 of these cases from the category of fever altogether. 1 died of Cholera, while other 6 presented lesions of so distinctive a character as to warrant our accepting the existing *fever,* as only *symptomatic.*

The cases I propose to remove from the list of fever casualties are marginally noted, and which still further reduce the mortality. One death from, or rather complicated with, tubercular disease of the lungs, is allowed to stand against "Intermittent Fever," because it is not known *how far* the tuberculosis contributed to the fatal termination of the case, though there can be little doubt that it was the cause of the fatal issue.

Died of Cholera.. 1
Hepatic Abscess and Peritonitis. 1
Valvular Disease of Heart..... 1
Abscess of Cerebellum 1
Hepatic Abscess and Dysentery. 1
Enlarged Liver and Abscess in left Kidney... 1
Dropsy with Tubercular Disease of Mesenteric Glands... 1

It has been noted that in 4 cases "ulceration of the small intestines" is recorded. These, viewed by the light of recent

pathology, may fairly be classed as "Typhoid Fevers," and the casualties carried to the credit of "Continued Fevers." Again, as "Ephemeral Fevers" are not ordinarily attended with *any* mortality, the 3 casualties under that head may also be transferred to "Continued Fever."

Under this re-arrangement the figures will stand thus—

Ephemeral	Fevers...	1821	cases with	no deaths.
Intermittent	do ...	2569	„ „	3* „
Remittent	do ...	394	„ „	6† „
Continued	do ...	191	„ „	14 „

It has been ascertained that of the 8 recorded deaths by remittent fever, 5 were "not examined;" that of the 2 cases found recorded, 1 exhibited *large ulcers in the small intestines,* and the other, enlarged liver and abscess in left kidney. One case remains unaccounted for, not being found in the autopsy reports.

From the experience I have had of the fevers of Trichinopoly, at which place 7 out of the 8 casualties from Remittent fever occurred, I believe that "ulceration of the small intestines,"—in a word the lesions characteristic of Typhoid or Enteric fever,—would have been found in other of the 5 cases "not examined," still further swelling the mortality of the class *Continued* fevers.

Adopting this rearrangement of "fevers" as exhibiting a more correct view, but still only an approximative one, of the mortality attaching to the different types of fever, the figures will stand thus—

Intermittent	fevers	in the ratio of	1·16	per 1,000	admitted.
Remittent	do	do	15·23	do	do
Continued	do	do	73·29	do	do

figures which certainly approach more nearly to the known mortality of these types of fever, than the rates pertaining to them as they stand upon the Regimental returns.

But it is almost impossible to form correct conclusions, as to the mortality of different *types* of fever; for although we may possess sufficiently accurate data upon which to deduce the death-rate of fever as a *class,* the same result has not till

* 3 only of 5 fatal cases are found on record, the 2 not found are allowed to stand as recorded, viz.: deaths by intermittent fever, and 1 case complicated with phthisis.

† 5 "not examined"—1 not found on the records.

very recently, even in Europe, been arrived at as regards the different *types*.

THE RELATIVE PREVALENCE OF THE DIFEERENT TYPES OF FEVER.—This has been already incidentally touched upon, but the subjoined table may be given—

Types of Fevers.	Admitted.	Ratio per cent.	
		Admissions to Strength.	Admissions to total Admissions by Fever.
Ephemeral*..	1827	10·32	36·6
Intermittent.....	2581	14·57	51·7
Remittent.....	396	2·23	7·9
Continued.....	187	1·05	3·7

Comparing this with Dr. Ewart's table (No. XIV.), the first fact to be noted is the widely differing ratios to *all admissions by fever* which the two tables exhibit.

Dr. Ewart's table.	Ratio per cent. of different types to all Fevers.	2nd E. L. I.
Intermittents.....	36·21	51·7
Remittents.....	11·83	7·9
Continued..	45·95	3·7
Ephemeral.....	5·99	36·6

By Dr. Ewart's table (framed for this Presidency) continued fevers stand at the top of the list of comparative prevalence, being as high as 45·95 per cent. of the whole. In the 2nd E. L. I. they have only prevailed in the ratio of 3·7 per cent.! Again, while in the 2nd E. L. I. Ephemeral fevers hold the ratio of 36·6 per cent. of the whole, by Dr. Ewart's tables the same class is illustrated by the remarkably small per centage of 5·99. There can I think be no question that the returns of this Regiment exhibit the truer results. Continued fevers—(fevers lasting beyond a few hours or days, and which exclude them from the group of "Ephemeral fevers" or "Febricula") are the exception: and doubtless a large

* This table is framed upon the table in the Appendix.

majority of the continued fevers of Dr. Ewart's table were of the Ephemeral type. In future, since "Febricula" or "Ephemeral" fever is no longer found in our nomenclature of diseases, all fevers, which do not present distinct intermissions or remissions, will be liable to be classed as *Continued*, but in the period for which Dr. Ewart's table is framed the milder types found, or could find, entry under "Febris Ephemera."

It is much to be regretted that "Febricula" is removed from the classes of fever in the new nosology, as it will be next to impossible to compile any reliable statistics of fever in future.

ERUPTIVE FEVERS.—This class need only occupy a moment's consideration.

Since the formation of the Regiment there have only been 57 admissions by eruptive fevers, distributed thus:—Rubeola 16, Scarlatina 1, Variola 24, Varicella 13, Vaccinia 3. One death only is recorded under Variola, which disease invaded the ranks of the Regiment at Secunderabad, 22 out of the 24 admissions having occurred at that station.

The solitary case of Scarlatina recorded requires no further notice. Contrasted with the statistics of eruptive fevers amongst troops in the United Kingdom for 1859, the figures stand thus, and may be accepted as satisfactory proof of the slight prevalence of fevers of this class, and,—since the larger number of admissions are for Variola,—of the efficacy of vaccination as a prophylactic in this Regiment.

Troops.	Admissions per 1,000 of Strength.	Deaths per 1,000 of Strength.
2nd E. L. I....	3·31	0·056
Troops in United Kingdom*	6·13	0·295

Proceeding with Zymotic diseases, although this is not the order in which diseases are entered in the returns for this Regiment for the period reviewed, the next diseases for examination are *Dysentery* (acute and chronic) and *Diarrhœa*.

* Statistical, &c., Reports for 1859.

DYSENTERY AND DIARRHŒA.—Table exhibiting the admissions, deaths, &c., &c., from Dysentery and Diarrhœa in the 2nd E. L. I. for the years 1840 to 1860 inclusive.—Strength 17,703·71.

Diseases.		Admitted.	Died	Ratio per 1,000.		
				Admitted to Strength.	Deaths to Strength.	Deaths to Admissions.
Diarrhœa.....		1190	27	67·21	1·52	22·68
Dysentery...	Acute	2292	122	129·46	6·89	53·22
	Chronic	189	12	10·67	0·67	63·48

Dr. Ewart's 27th table exhibits the sickness and mortality from these diseases *as a class* in this Presidency from 1829 to 1851-52 inclusive, and is given here in justa-position with the statistics furnished by this Regi...ent.

Troops.	Periods.	Strength.	Admissions.	Deaths.	Ratio per 1,000.		
					Admissions to Strength.	Deaths to Strength.	Deaths to Admssns.
Madras Troops (Ewart, Table XXVII.).....	1829 to 1851-52	213,587	50,051	2,657	234·3	12·4	53·0
2nd E. L. I...	1840—60	17703·7	3671	161	207·34	9·08	43·85

Notwithstanding, then, that this Regiment suffered very severely from Epidemic Dysentery at Secunderabad in 1851-52, the mortality upon the class of diseases above grouped together, is *lower* both as relates to "strength" and "treated," than is exhibited in Dr. Ewart's returns, the ratio of deaths to strength being 3·32 per 1,000 lower, and deaths to admissions 9·15 per 1,000.

Dysentery alone has contributed 2,481 cases and constitutes 140·13 per 1,000 of all admissions by disease, while the mortality has been 7·6 per 1,000 of strength and 54·01 per 1,000 of admissions by Dysentery.

The importance of this disease demands that the more recent statistics, as applicable to this Presidency, be collated and examined for comparison with the results above exhibited.

Those to which I have access are arranged in the following table.

Troops.	Stations.	Periods.	Strength.	Admissions.	Deaths.	Ratio per cent.		
						Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
H. M.'s Regiments..	Secunder-	1829—1839....	7,561	2,004	293	26·504	..	14·22
H. C. Artillery.....	abad....	1829—1840....	1,382	260	21	18·813	..	8·07
Madras Troops*....	Madras Presy.	1829—1851-52.	213,587	30,593	4304	14·32	1·07	7·53
Madras Troops†....	Do.	1842—1858-59.	176,629	21,431	1532	12·1	0·86	7·10
Madras Troops‡....	Do.	1842—1851....	110,156	13,151	922	11·9	0·83	7·10
2nd E. L. I.....	Do.	1840—1860....	17703·71	2,481	134	14·61	0·76	5·40

Compared then even with Mr. Cornish's more recent statistics which extend to 1858-59, those resulting from the analysis of the returns of this Regiment exhibit a death-rate to *treated* lower by 1·7 per cent. (17 per 1,000.)

But instead of accepting the figured returns as they stand, if we examine the casualties by the light of the autopsy reports, we find, as might be anticipated, that many of the deaths recorded under "Diarrhœa" ought to be carried to the account of "Dysentery," reducing the mortality by the one and raising that by the other.

The figures I have placed in apposition with those derived from the returns of this Regiment, were most probably not subjected to this scrutiny, but simply exhibit the entries in the figured returns from which they were compiled. So that in scrutinizing the recorded deaths in this Regiment I am, I am aware, subjecting them to an ordeal which the statistical returns with which they are compared have not been subjected to.

The result will, however, manifestly fix more nearly the death-rate of this most important class of diseases.

In the returns there are recorded 27 deaths by "Diarrhœa," 122 by Acute, and 12 by Chronic Dysentery; of these there are entered in the autopsy reports 125 "Dysentery" (acute and chronic), and 27 Diarrhœa, all the cases then of "Diarrhœa" are accounted for, but only 125 of "Dysentery." In 16 of

* Ewart op. cit. † Cornish. ‡ Waring.

the deaths by Diarrhœa, ulceration, more or less extensive, of the *large bowel*, was found on examination, which cases may be transferred to "Dysentery," raising the number of *cases* of that disease to 2,497 with 150 deaths, equal to 60 per 1,000 of "admissions." "Diarrhœa" is in the same proportion reduced to 1,174 cases with 11 deaths; but of these 11, two are otherwise accounted for, viz., one by "Cholera" and one by "Phthisis," of which the diarrhœa was only a symptom or concomitant; so that only 7 of the 27 recorded deaths by "Diarrhœa" (and two of these 7 were not examined after death) are really attributable to that disease, or in the proportion of 7·67 per 1,000 of admissions.

Association of Hepatic Abscess with Dysentery.—The association of Hepatic Abscess with Dysentery may be here alluded to. It is not my intention to enter into any controversial consideration of the disputed question of the relation between them as cause and effect, but I may state that my own opinion sides with those who consider that the evidence derived from the records of practice in India does not support the theory first, I believe, advanced by Dr. Budd.

In the 150 deaths by dysentery collected from the autopsy returns of this Regiment, after the corrective scrutiny to which the whole have been subjected, 9 are not found in the autopsy reports, and 14 "not examined," leaving 127 for analysis.

In 99 of these cases, or in 77·95 per cent. no abscess was found; in 11 a solitary abscess existed; in 6 two abcesses; and in 11 three or more. Total number of cases in which Hepatic abscess was found 28, equal to 22·05 per cent. These results are certainly opposed to the theory of hepatic abscess being the *effect* of intestinal ulceration, for in 22·05 per cent. only of the fatal cases is abscess found.

They support the opinion expressed by Dr. Morehead, that although we may admit that hepatic abscess may be "*occasionally*" induced by pyæmia, in the way suggested by Dr. Budd,—as a "*general* proposition" it is "altogether at variance with the results of clinical research in India."

But 24 additional cases of Hepatic abscess found in the returns, occurring under the head of Hepatitis (21 cases), Obstipatio (2 cases), and Gastritis (1), raise the number to 52; in 41 of which there was co-existent ulceration of large

intestine (Dysentery), in 10 the colon was healthy, and 1 was "not examined."

We obtain then 150 casualties from dysentery and hepatic abscess, the post-mortem reports of which are extant, and in which the results may be thus expressed.

Dysentery *without* Hepatic abscess, 99 cases.
Dysentery *with* Hepatic abscess, 41 cases.
Hepatic abscess without Dysentery, 10 cases.

These figures may be compared with those collated by Messrs. Waring and Eyre.

Mr. Waring gives 633 cases of fatal dysentery with hepatic abscess in 149. Mr. Eyre 118 with abscess in 27. The series I offer comprises 127 cases with 28 instances of concomitant abscess, or, expressed in the ratio per cent. which hepatic abscess bears to the total cases of dysentery, the figures stand as in the margin; a striking similarity, as observed by Mr. Eyre, adding additional force to his question, "If the theory of the formation of hepatic abscess be sound, how is it that 77 per cent. of dysentery had no hepatic disease."

Mr. Waring's,	23·54 per cent.
Mr. Eyre,	22·88 „
Cases from the records of 2nd E. L. I.	22·05 „
Mean.	22·823 „

EVIDENCES OF DIMINISHED MORTALITY BY BOWEL COMPLAINTS.—*Evidence of diminished Mortality by Dysentery and Diarrhœa*, treated *as a class*, as derived from the records of this Regiment, may next be enquired into.

Arranged for quinquennial periods the results are thus exhibited.

Periods.	Admissions.	Deaths.	Ratio per cent.		Stations.
			Deaths to Strength.	Deaths to Admissions.	
1840 to 1844.....	714	37	0·88	5·18	Arnee & Bangalore
1845 to 1849.....	894	45	0·95	5·03	Trichinopoly.
1850-51 to 1854-55.	1294	67	1·45	5·18	Secunderabad.
1855-56 to end of 1860.....	768	12	0·28	1·64	Madras, Sea, Tonghoo and Trichinopoly.

There is a very remarkable decrease in the death-rate, both as applied to strength and admissions, in the last period, and which, I should remark, embraces a period of nine months over and above five years. The first suggestion is, that the result may be attributed to the re-introduction, or revival, of the system of treatment by large doses of Ipecacuanha.

The fact that during the quinquennial period, from 1850-51 to 1854-55, when the disease was treated by large doses of Ipecacuanha, by the Medical officer then in charge, and who has acquired the reputation of being "for many years one of the most successful practitioners in the treatment of this disease," and that the mortality stood as high as 5·18 per cent., would appear to militate against this view; but when the character of the epidemic which prevailed in 1851-52 is taken into consideration, it does not really do so. The formidable outbreaks of Typhoid Dysentery so often witnessed at Secunderabad, and which type constituted the epidemic alluded to, differ widely from the disease as it has at other times prevailed in the Regiment.

If we exclude the year 1851-52 from the table, we obtain 835 admissions by Dysentery and Diarrhœa, and 16 deaths, the latter being in the proportion of 1·91 per cent. to admissions—a ratio closely approximating to that of the 4th period 1·6.

If we compare the two *decennial* periods, even including, in the last, the fatal outbreak at Secunderabad, we obtain the death-rate to admissions of 5·10 and 3·41, or 1·69 in favor of the second period.

The evidence then of a greatly decreased rate of mortality by this class of diseases in this Regiment, in recent, as compared with more remote, periods, is conclusive, and can, I think, only be attributed to improved modes of treatment, together with more efficient "sanitation;" mainly I believe to the judicious use of Ipecacuanha in the earlier stages of the disease.

CHOLERA.—The two most severe epidemic outbreaks of this disease were experienced by this Regiment at Arnee and Bangalore, but it has also prevailed, though less extensively, at other stations. It has prevailed every year of the Regiment's residence at Trichinopoly; but it has not exhibited at that station any tendency to spread, the number of cases each year being small.

In all 133 cases are recorded with 57 deaths, but 3 patients in hospital, suffering from other diseases, fell victims to this scourge, raising the cases to 136 and the deaths to 60—equal to 44·12 per cent., one to every 2·26 attacked.

Dr. Ewart gives (Table LIV.) 33·70, 32·52, and 34·83, as the ratio per cent. of deaths to admissions by this disease in the Presidencies of Bengal, Bombay and Madras respectively.

By Table LVI, he also shows that the mortality has been steadily on the *increase*, rising in this Presidency from 27·11 (ratio of deaths to admissions) in 1829 to 1833, to 62·31 from 1847 to 1857.

The epidemics which visited this Regiment at Arnee and Bangalore have a death-rate to admissions of 47·7 and 70·8 respectively, while the cases which have occurred at Trichinopoly present the more moderate death-rate of 35·7. This does not, however, invalidate Dr. Ewart's general proposition, that "the proportion of deaths to attacks has increased throughout the Indian Peninsula," which appears to be abundantly established by the statistics he has put together.

Rheumatism, Acute and Chronic.—To complete the review of diseases of this order, *miasmatic*, rheumatic affections must next be considered.

Rheumatism, acute.....	736 cases with	2 deaths
Chronic and other rheumatic affections..... ..	935 „	„
Total...	1,672	2

Admissions per 1,000 of strength ..... = 94·3
Do. of all admissions by disease..... = 53·2
Deaths per 1,000 of all admissions by rheumatism = 1·19

The two fatal cases presented the following post-mortem appearances. One, an advanced stage of kidney disease, with effusions into pericardium, and "enlarged" heart; the other, abscess of lower lobe of right lung, and abscess in brain. The first case, then, is one of cardiac and renal disease associated with rheumatism; the latter may be removed from the category of Rheumatic affections altogether, at least so far as the fatal result is concerned. It is difficult to assign it its right place, probably it would find it under *class* Constitutional, *order* "Tubercular."

The connection between Rheumatism and Heart disease is in no way illustrated by this table. That 736 cases of

acute rheumatism should be recorded, with only one death, would make it appear that acute endo or peri carditis, as a metastatic affection, is not common. Possibly however when reviewing the admissions by diseases of the heart and circulatory system, and the statistics of invaliding, we may obtain more evidence upon the subject.*

I have now enumerated all the diseases which can be grouped under order 1st, "*Zymotic*," class 1st, *Miasmatic*, of this new nomenclature; and, after subjecting all the fatal cases to examination, I am able to arrange the following table of *Miasmatic* diseases as a class.

Fevers	2,984	with	23	deaths.
Eruptive Fever	57	,,	1	,,
Cynanche Parotidea	24†	,,	1	,,
Dysentery	2,497	,,	150	,,
Diarrhœa	1,172	,,	9	,,
Cholera	136	,,	60	,,
Ophthalmia	794	,,	0	,,
Rheumatism	1,660	,,	1	,,
Total...	9,334		245	

Ratio per 1,000 of admissions to strength	526·6
,, ,, of deaths to strength	13·8
,, ,, ,, to admissions by Miasmatic disease	26·2

Order 2, Enthetic Diseases.

These are in the returns represented almost entirely by Venereal affections and diseases of the Genital organs, and comprise.

Bubo	1,005	cases with	1	death.
Gonorrhœa	2,186	,, ,,	0	,,
Syphilis Primaria	2,057	,, ,,	3	,,
,, Secondaria	191	,, ,,	3	,,
Other diseases of genital organs	469	,, ,,	0	,,
Total...	5,850		7	

Ratio per 1,000 of admissions to strength	330·4
,, ,, to all admissions by disease	193·2

* Since writing this, invaliding has been enquired into, and allusion has been made to the large number of men invalided on account of affections of the heart. The connection of such cases with prior rheumatic attacks is not illustrated by the reports.

† One death is recorded under this, but it was associated with "Phthisis," which disease was doubtless the cause of death.

The ratio of admissions to strength by this very important order of diseases, high as it is, falls short of that which pertained to the troops in the United Kingdom in 1859, in which year there were 422 admissions amongst only 1,000 men,* or 92 per 1,000 in excess of the ratio for this Regiment.

I possess but few statistics of these diseases as relates to this Presidency with which to compare these figures.

Dr. Arnott gives, according to Mr. Eyre, 26·3 as the *percentage* of admissions by venereal to the Bombay Fusiliers, which is higher by 6·98 per cent. than the average for this Regiment.

The relative prevalence of "Gonorrhœa" and "Syphilis" has been as 1·25 (syphilis) to 1 (gonorrhœa). Amongst home troops, for 1859 the proportion was as 1·74 to 1, and for 1860 as 1·47 to 1.

The proportion which *secondary* bears to *primary* disease, as far as is illustrated by the figured returns, is 9·23 per cent., or 1 case of consecutive to every 10·7 cases of primary affection.

I have no means of determining the average number of days passed in hospital by these diseases, but the fact that 193 out of every 1,000 men admitted into hospital, or 330·4 per 1,000 strength, are the subjects of this order of diseases, sufficiently establishes the extent to which the efficiency of the Regiment has been crippled, independent of that deterioration of constitution and increased proclivity to disease which such affections engender. Seven deaths are recorded, 3 under *Syphilis Primaria*, 3 *Syphilis Consecutiva*, and 1 *Bubo*. The autopsy reports elucidate these casualties and enable me to assign the causes of death in four instances only.

Syphilis Primaria	2.	Sloughing Bubo and Peritonitis by opening of the cavity of the abdomen.	1
		General Cachexia with Organic Renal disease.	1
Syphilis Consecutiva	2.	General Cachexia with Tubercular deposit in liver. ...	1
		Cirrhosis of Liver & Dysentery.	1

* Since writing this I have obtained access to the statistical report for 1860, for which year the average for the United Kingdom is 345·9 per 1,000 of strength.

Of the remaining three—two are "not found," and one was "not examined."

Giving admission to the whole, the death-rate to all admissions, by this class of affections is 1·19 per 1,000.

Order 3, *Dietic.*

Under this order, only one disease is recorded, "*Ebrietas*" —663 admissions with 2 deaths. By the oft quoted Army Medical Reports for 1859, it is shewn that out of an aggregate strength of 71,715 in that year in the United Kingdom, there were only 41 admissions by Ebriositas.

I consider it advantageous to depart from the order of arrangement of disease hitherto adopted, and to consider *Ebrietas* (or Ebriositas) and *Delirium Tremens* under one head. They are so closely allied, the one so often passes into the other, it is so difficult frequently to define the boundary line between them, that I am, I think, justified in this step.

The relative prevalence of these diseases in the different "*commands*" enumerated in the Army Medical Reports for 1859 and 1860, may be tabulated for comparison with such statistics as I can collate regarding their prevalence in India and in this Regiment.

Periods.	"Commands," &c.	Strength.	Admissions.	Deaths.	Ratio per cent.		
					Admissions to Strength.	Deaths	
						To Strength.	To Admissions.
1859.	United Kingdom	71,715	234	14	0·32	0·019	5·9
	Mediterranean	14,773	52	5	0·35	0·033	9·6
	British America	6,013	84	6	1·39	0·09	7·14
	Jamaica, Windward and Leeward Command	3,659	56	14	1·53	0·38	25·
	St. Helena, Cape, Mauritius, Ceylon	6,954	85	6	1·22	0·08	7·05
	Australia, New Zealand, China	4,389	43	2	0·98	0·04	4·6
10 years, from 1838—1848.	European General Hospital, Bombay	not known.	475	57	...	...	12·
*1851-52—1860-61	Madras Fusiliers	†6,400	69	3	1·07	0·04	4·3
1840—1860	2nd E. L. I.	17,703	1182	2	6·67	0·011	0·16
1860	United Kingdom	74,386	562	20	0·75	0·026	3·55

* Exclusive of 1856-57. † Strength assumed as 800 men.

It would appear, then, that intemperance is more rife in India and intertropical "commands," than in more temperate climates, and that it has prevailed to the largest extent in this Regiment, the admissions being in the ratio of 6·67 per cent. of strength.

The death-rate varies widely, being as high as 25 per cent. to "treated" in the Jamaica, &c., "command," and as low as 0·16 in this Regiment, in which the mortality is due entirely to two deaths under "Ebrietas"—Delirium Tremens, as I have elsewhere shown, is represented by 519 cases without a single death.

Taking the average mortality from Delirium Tremens *alone* in all the "commands" tabulated from the Army Medical Reports for 1859, it may be stated at 7·85 per cent. to treated.

This may perhaps be accepted as the approximate death-rate of this disease, out of India. The prevailing belief is that it is more fatal in the tropics, than in temperate climates.

In Jamaica and its associated "commands" we have seen that it is as high as 25 per cent. In the Bombay General Hospital the average for 10 years is 12 per cent., and in the Madras Fusiliers for 8 years it was 15·79.

How then can it be accounted for, that so large a number of cases as 519 have occurred in this Regiment without a single death!

The reports, it is true, state that the disease complicated some fatal cases of dysentery. How many is not stated. But this fact offers no solution. The causes of fluctuation in the number of *admissions*—of the *prevalence* that is of intemperance—are patent, can be traced and accounted for; but the records do not afford information as to the causes which have operated so favorably in affecting the death-rate of so grave and frequently fatal a disease as Delirium Tremens.

The treatment adopted as far as can be gathered from the "reports" was mainly by stimulants and opium, or by the treatment known as "*Dr. Graves'*." In a word it has comprised those therapeutic measures generally adopted by the profession.

Any *special* treatment or management can scarcely then be advanced in explanation of the very low mortality—the

absence of all mortality in fact—as relates to Delirium Tremens.*

CLASS II.—CONSTITUTIONAL DISEASE.

Order 1, *Diathetic.*

The only disease found in the returns under this order is "Anasarca"—33 admissions with 6 deaths—which stands associated with other dropsical affections under the head "*Dropsies.*"

It will, I think, be more instructive to consider these "dropsies" as a class by themselves, for though dropsy is often only a symptom of widely differing diseases, still it is so important a symptom, as to stand itself in the position of a specific "*disease.*" Besides which, by adopting this course, I shall be enabled by means of the autopsy reports to trace the associated organic disease.

There are, then, under the head of "Dropsies"—

33	cases of	Anasarca with	6 deaths.
4	,,	Ascites	3 ,,
2	,,	Beriberi	2 ,,
2	,,	Hydro-thorax	2 ,,
Total.. 41			13

Ratio per 1,000 admissions to strength.... 2·31
Ratio per 1,000 deaths to treated..... 317·0

The mortality, then, is 31·7 per cent. of treated. By the autopsy reports I am able to ascertain that the organic morbid changes associated with the "dropsy," are, in nine cases, as follows :—(four are not found upon the autopsy reports.)

Anasarca.....	5	Renal disease in all, associated in one case with Cirrhoris of Liver and effusion into the Pericardium, and in one with disease of the Heart.
Ascites.....	2	Organic disease of Heart in one, and advanced Renal disease in the other.
Hydro-thorax.....	2	Cardiac disease in both.

One case only of Beriberi was examined.

We have here sufficient proof of the frequency of organic renal disease as a cause of the cases of dropsy which have

* In the Army Medical Statistical Reports for 1860 the cases of Delirium Tremens in all the "commands," exclusive of India, are 392 with 24 deaths or 6·12 per cent. to treated. In Bengal the mortality was 8·3 per cent., in Madras 5·88, and in Bombay 4·41.

occurred in this Regiment. Every case of fatal anasarca recorded presented the pathological changes in the kidneys, marking one or other of the varieties of "Morbus Brightii;" one case of Ascites also was associated with Renal disease.

The nature of the disease, that is, of the structural changes in the kidneys, is not detailed with any minuteness. *Enlargement* of the organs with *loss of color*, with deposit of adventitious matter and obliteration of the tubular structure, are the changes noted, and they are sufficient to mark them, as instances of that form of "Bright's disease," which consists in changes taking place *within the tubes*:—the large pale mottled kidney of chronic desquamative nephritis, and not the small contracted kidney of "granular degeneration" of the intertubular structures.

Diseases of the kidneys amongst our European troops scarcely yet obtain that attention which their gravity demands.

It is only in the new nosology that provision has been made for their record.

By the "Statistical reports" for 1860, I observe that 11 cases of "*Nephrea*" are recorded as having occurred in India, viz., 4 in "Bengal" and 7 in "Madras" with 2 deaths. These entries do not, I conceive, at all exhibit the extent to which the disease under consideration exists amongst our troops. Many cases doubtless occur, and are accounted for under "Anasarca," of which disease there were 59 admissions in India in 1860 with 6 deaths.

According to my own limited experience, the form of renal disease most commonly met with, is "fatty degeneration," and this, associated with fatty degeneration of the liver, I believe to be very common. The change is only to be determined by careful microscopic examination of the urine during life, and of the kidneys after death, for I need not remark that naked eye inspection will not determine the nature of the pathological changes.

The great tendency to, and frequent occurrence of, fatty degeneration of the textures amongst our European troops in India, has been ably illustrated in the pages of the "*Indian Annals*" (in the October number of 1855) by Mr. Macnamara; and I do not think that he has over-estimated the frequency of such changes in the livers and kidneys of our soldiers dying in this country, changes which I believe to account for many of the chronic ailments returned as "Hepatitis" and Hepatic Diarrhœa.

Order 2, Tubercular.

TUBERCULAR DISEASES.

Scrofula.....	135	cases	with	3	deaths.
Phthisis.....	27	,,	,,	8	,,
Hæmoptysis.	21	,,	,,	3	,,
Total...	183			14	

Ratio per 1,000 of admissions to strength 10·3
,, ,, of deaths to ,, 0·79
,, ,, ,, to treated 76·5

The above statistics of this very important order of diseases demands comparison with records of prevalence and mortality in other parts of the globe, for there is a general opinion that Phthisis (which contributes the largest mortality of the order) is comparatively rare in India, and that the climate has the effect not only of preventing the development of the disease in individuals inheriting the tubercular diathesis; but that it even arrests the progress of the disease in cases in which the existence of tubercular deposit in the lungs, has been established, and favors the recovery of those in whom softening and elimination has commenced.

Sir A. Tulloch long since pointed out the fallacy of the opinion as regards the West Indies.

It is satisfactorily established that natives of inter-tropical countries are by no means exempt from tubercular diseases of the lungs, and I am disposed to hold that a residence in the East Indies does not confer that safety to the European deeply tainted with scrofula, that immunity from a progress of the disease, which the prevalent belief accords.

The figures above given do not at all exhibit the extent to which Phthisis has prevailed in this Regiment.

By the autopsy reports tubercular disease of the lungs in an advanced stage is traced in the following instances. Diarrhœa 2 cases, Scrofula 2, Hæmoptysis 2, Asthma 1, Cynanche Parotidea 1, Bronchitis 1, Catarrhus, Chronic 3; Total 12, which raise the cases of Phthisis to 39 with 20 deaths.

The ratio then of admissions by Phthisis to strength is 2·20 per 1,000, of deaths to strength 1·12 per 1,000, and of deaths to treated 512·8 per 1,000.

Few statistics of the disease in India exist with which to make a comparison.

Mr. Ewart gives a table for Bengal and Bombay, and Dr. Morehead one for the latter, with which, and the Statistical,

&c. Reports of the Army Medical Department for 1859 and 1860, the disease, as it has occurred in this Regiment, may be compared.

	"Commands," &c.	Strength.	Admitted.	Died.	Ratio per 1,000. Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
Army Medl. Reports, 1859-60.	United Kingdom	155,101	1,420	566	9·15	3·64	398·
	Mediterranean	30,390	146	27	4·80	·88	185·9
	British America, &c	11,393	94	19	8·29	1·66	202·13
	Windward and Leeward Islands	6,763	32	4	4·73	·59	125·
	St. Helena	926	4	2	4·32	2·16	500·
	Cape of Good Hope	8,564	56	11	6·54	1·28	196·4
	Mauritius	3,130	35	3	11·15	·95	85·7
	Ceylon	1,829	11	4	11·48	2·18	363·6
	South China	4,104	21	5	5·11	1·22	238·
Do.	India (1860)	64,455	440	101	6·82	1·56	239·
Ewart.	Bengal 1812—1853-54	443,768	11,239	1173	20·6	2·2	104·3
	Bombay 1803—1856	306,978	6,444	474	29·9	1·2	73·7
* Bengal 8 years ending 1853-54		156,139	684	307	4·3	1·9	448·8
2nd E. L. I.		17,703	39	20	2·20	1·12	572·8

Exhibiting the order of precedence in relation to "*admissions to strength*," "*deaths to strength*," and "*deaths to treated*," the figures stand thus per 1,000 of strength, &c.

Admissions to Strength.		Deaths to Strength.		Deaths to Treated.	
Bombay Ewart	29·9	United Kingdom, 1859-60	3·64	2nd E. L. I.	512·8
Bengal Ewart	20·6	Bengal (Ewart)	2·20	St. Helena	500·
Army Medl. Reports, 1859-60. Ceylon	11·48	Ceylon, 1859-60	2·18	India (Macpherson)	448·8
Mauritius	11·16	St. Helena do	2·16	United Kingdom	398·5
United Kingdom	9·15	Bengal (Macpherson)	1·9	Ceylon	363·6
British America	8·29	British America	1·66	India, 1860	239·5
India, 1860	6·92	India, 1860	1·56	South China	238·0
Cape of Good Hope	6·54	Cape of Good Hope 1860	1·28	British America	202·1
South China	5·11	South China 1860	1·22	Cape of Good Hope	196·4
Mediterranean	4·80	Bombay (Ewart)	1·20	Mediterranean	185·9
Windward & Leeward Islands	4·73	2nd E. L. I.	1·13	Windward & Leeward Islands	125·
St. Helena	4·32	Mauritius 1859-60	0·95	Bengal (Ewart)	104·
Bengal (Macpherson)	4·30	Mediterranean	0·88	Mauritius	85·7
2nd E. L. I.	2·20	Windward & Leeward Islands	0·59	Bombay (Ewart)	73·7

* Mr. H. Macpherson.

The sources of fallacy pointed out by Dr. Ewart in connection with his table must not be lost sight of, and the scrutiny to which the cases which have occurred in the 2nd E. L. I. have been subjected must be remembered.

Dr. Ewart's table (No. LXVII.) gives a rate of admissions so much higher than pertains to any other source, that there must evidently be some elements of error.

Confining our attention to *recent* statistics, those derived from the Army Medical Reports, we still find that two of our intertropical "commands" (Ceylon and the Mauritius) give higher ratios of admissions to strength than even the "United kingdom"—that "India" follows next in the scale, and then a progressively decreasing ratio is observed till we arrive at the Regiment whose statistics I am collating, and in which, notwithstanding that I have carried to the account of Phthisis every casualty in Hospital traceable to that disease, the admissions have only been in the rates of 2·20 per 1,000 of aggregate strength.

As regards *deaths to strength*, the "United Kingdom" heads the list, followed by (still dealing only with recent statistics) Ceylon, St. Helena, British America, "India," &c., while "*Mauritius*" which has the highest rate of *admissions*, exhibits the very low death-rate of 0·95 per 1,000; but the Mediterranean "command" has a still lower death-rate, or 0·88 per 1,000 of strength, and the West India Islands the lowest of all.

If we compare these figures with the statistics of mortality, as given by Dr. Aitken at page 463 of his "Science and Practice of Medicine," upon the authority of Sir James Clarke, we can arrive at no other conclusion than that a reinvestigation of the subject is necessary.

Dr. Aitken, in the work quoted, gives the following as the death-rate per 1,000 amongst white troops of the British Army serving at various stations. "*Windward and Leeward command*" 12 per 1,000, "*Jamaica*" 13, *Gibraltar* 6·5, *Malta* 6, *Ionian Islands* 5, *Bermuda* 8·9, *Canada* 6·5, *Nova Scotia and New Brunswick* 7, *Cape of Good Hope* 5·5.

By this table, in the Windward and Leeward command the mortality is represented by 12 per 1,000, Jamaica has

a still higher mortality or 13 per 1,000—mortuary rates which certainly appeared to justify Sir James Clarke's opinion as expressed by Dr. Aitken, that "great heat appears to have a powerful effect in predisposing to tuberculous diseases."

Recent statistics, however, shew not only that mortality by tuberculous disease in all the "commands" has materially fallen, but that the rates vary much from those given for different stations.

At the risk of being prolix, I think the question of sufficient importance to show the above figures in juxta-position.

Mortality by Phthisis Pulmonalis per 1,000 troops in the different "commands."

	Dr. Aitkin's Table.	Recent Statistics 1859-60.
Windward and Leeward Command	12·	0·59
Jamaica	13·	Nil.
Gibraltar	6·5	0·56
Malta	6·	1·24
Ionian Islands	5·	0·77
Bermuda	8·9	1·41
Canada	6·5	1·81
Nova Scotia, &c.	7·	2·75

Jamaica and the West India Islands then no longer exhibit a mortality from Phthisis, which supports the opinion "that great heat predisposes to tubercular disease," but, on the contrary, a death-rate so low that we might affirm confidently, that those islands are peculiarly suitable for the residence of phthisical patients. At Jamaica no deaths occurred amongst the white troops either in 1859 or 1860 from Phthisis.

The mortality by tubercular diseases, as a class, for India is, according to the Army Medical Department Statistical Report for 1860, 2·57 per 1,000 of strength in Bengal, 2·19 in Madras, and 1·58 in Bombay, or (including deaths amongst invalids on their passage to, or shortly after their arrival in, England,) 2·33 per 1,000 for the whole of India. It is elsewhere shown in the same "reports" that out of 642 discharg-

ed (at Chatham and Woolwich) on account of disease 108, or one in every 5·94 were for "Pulmonary disease."

A considerable proportion of the "Pulmonary" cases were doubtless "Phthisis," so that in instituting a comparison between the rate of mortality by this disease for India and the home commands, it is necessary to bear in mind that many cases leave this country to die in England, while the converse does not, I imagine, apply.

Cases of Phthisis occurring amongst our troops in the United Kingdom, are not sent to other stations for "change of climate," but either die in Hospital, or are discharged.

May not then the difference in the death-rate for "United Kingdom" and for "India" be thus partly accounted for.

The disease once pronounced, the chance of recovery does not in any way appear to be increased by residence in India, for by the table before given, while the death-rate at home to cases under treatment is 398 per 1,000, in the 2nd E. L. I. (which, under the regulations applying to the old Company's troops, did not enjoy the same advantages as Queen's troops in regard to change of climate), the death-rate amongst men remaining with the Regiment was as high as 512·8 per 1,000 treated, and would be represented by a much higher ratio could the number of re-admissions of one and the same patient be traced.

After all, then, the figures I have put together scarcely prove more than that a great reduction in the mortuary rate by Phthisis has occurred of late years in every "command," but scarcely assist us in determining whether a residence in the East Indies does or does not give that immunity from tubercular consumption, which it is alleged to confer upon those inheriting the scrofulous diathesis.

Dr. Morehead has suggested that the accession of Phthisis is postponed to a later period of life by a residence in India, and states that of 9 Europeans who died in the General Hospital at Bombay, 7 were upwards of 30 years of age. In 16 fatal cases which have occurred in this Regiment, the ages are as follows:—at 20 years, one death; 21, one; 22, two; 23, two; 26, one; 27, one; 28, one; 30, two; 33, one; 36, one; 39, one; 43, two. There are 9 deaths, then, *under* 30 years of age against 7 *above* that age, which results do not support Dr. Morehead's suggestion.

Class III.

Order 1, *Diseases of the Nervous System.*

Apoplexy.....	18	cases with	15	deaths.
Ictus Solis.....	13	„	6	„
Cephalalgia.....	922	„	1	„
Paralysis.....	46	„	4	„
Other diseases*..	152	„	0	„
Delirium Tremens.....	915	„	0	„
Total...	2066		26	

Ratio of admissions per 1,000 of strength 116·7
„ of deaths „ „ 1·46
„ „ to admissions by Nervous Diseases... .....12·58

The two diseases standing at the head of this order are as before suggested, probably all cases of heat asphyxia. "*Ictus Solis*" has no entry in the returns prior to 1851-52, and after that period only two admissions by *Apoplexy* occur, so that I have considered it advisable to remove "Ictus Solis" from the class, *Violence and Accident*, under which it is rendered by the new statistical nosology, and account for it as an affection of the nervous system.

Out of 15 deaths by "Apoplexy," 4 occurred at Arnee, 10 at Trichinopoly, and 1 at Madras; 4 out of the 6 deaths by Ictus Solis occurred at Trichinopoly. So that 14 out of the 21 deaths happened at Trichinopoly—a fact which scarcely requires any explanation.

Delirium Tremens has been already alluded to in connection with Ebrietas or Ebriositas, and requires no further notice.

The death recorded under "*Cephalœa*" was a case of complex disease—Heart and Renal affection, with effusion into the pleura and pericardium, and sub-arachnoid effusion also.

All the fatal cases of this class and order of diseases have not been examined after death. I find the reports of 10 of Apoplexy, 2 of Paralysis, 3 of Ictus Solis, and 1 of Cephalæa. In 4 only of the cases of Apoplexy and Ictus Solis, do I find allusion to "*Congestion*" or "*Engorgement*" of the *Lungs*, and in one case of Paralysis.

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* Mania, Dementia, Epilepsy, &c., and which, as there is no mortality from them, are thus massed.

Order 2, *Diseases of Circulating System.*

Under this order there occur by the table,

Aneurism.....	5	admissions with	2	deaths.
Angina Pectoris..	1	,,	1	,,
Carditis.....	222	,,	8	,,
Palpitatio.....	83	,,	1	,,
Total..	311		12	

But these figures do not by any means represent the extent to which this order of diseases prevailed.

The autopsy reports record the existence of disease of the heart and large vessels in the following instances—Ulcus 1, Febris Ephemera 1, Anasarca 1, Ascites 2, Rheumatism 1, Hydrothorax 1; while in 4 cases recorded as "Catarrhus," deaths resulted from rupture of aneurismal sacs. This raises the number of cases of Aneurism to 9 with 6 deaths; Carditis, under which entry is included all forms of heart disease, to 229 cases with 15 deaths.

5 out of the 6 deaths by aneurism appear in the autopsy records, in 4 the aneurism was *thoracic*, in one *abdominal* aortic, the latter opening through the diaphragm and bursting into the thoracic cavity.

In the case of *Angina Pectoris*, the heart was enlarged (weight 2 lbs. 4 oz.), and the pericardium was adherent throughout. There was also "cartilaginous" degeneration of the mitral valve, cirrhosis of the liver, and the kidneys weighed 8 oz. each, their tubular structure being entirely obliterated.

The case of "Palpitatio" presented enlarged heart, effusion into pericardium, aortic valvular disease, effusion into both pleural cavities, and the kidneys weighed each 11 oz.!

We have abundant evidence, then, of the frequency of diseases of the heart, and of the not unfrequent association of renal diseases—a class of cases of the most unpromising and fatal character.

I have already shewn the extent to which heart affections contributed to "*discharges on account of disease.*"

Subjoined is a table illustrating the prevalence of diseases of this order amongst troops serving in the "United Kingdom" in 1859 and 1860, compiled with a view to aid in solv-

ing the disputed question of the comparative prevalenec of such diseases in India.

Diseases.	United Kingdom. 1859 & 1860. Strength 146,101.					2nd E. L. I. 1840 to 1860. Strength 17,703.				
			Rate per cent.					Ratio per cent.		
	Admitted.	Died.	Admitted to Strength.	Deaths to Strength.	Deaths to Treated.	Admitted.	Died.	Admitted to Strength.	Deaths to Strength.	Deaths to Treated.
Carditis..... ...	132	16				229	15			
Pericarditis.....	126	13								
Hypertrophy.....	313	24						1·77	0·09	5·43
Morbus Cordis...	393	44								
Palpitatio..... ...	36	1	0·69	0·07	10·13	84	2			
Endo Carditis. ...	2	0								
Atrophy and Degeneration.	5	4								
Aneurism.....	40	24	0·026	0·016	60·	9	6	0·050	0·034	66·6
Total .	1047	126	0·709	0·086	12·04	322	23	1·82	·129	7·14

In examining this table we must not lose sight of the fact that I have added to the cases in the E. L. I. all deaths which the autopsy reports show to be traceable to heart affections, and this ought not, I think, very materially to affect the results, for the Army Medical Returns with which the comparison is made, apply to periods during which structural diseases of the heart, owing to the great advances lately made in the diagnosis of these affections, are less likely to be overlooked.

The table then shows that admissions and deaths to strength have been *higher* in this Regiment than amongst troops serving in the United Kingdom in 1859 and 1860, but that the death-rate to *treated*, is considerably *lower*, being represented at *Home* by 120·4 per 1,000, *and for this Regiment* by 71·4 per 1,000.

If we adopt the figures taken from the table in the appendix, uncorrected, that is, by the autopsy reports, the ratios *per cent.* will stand thus. Admissions to strength 1·75, deaths to strength 0·067, deaths to treated 3·85, against 0·709, 0·036, and 12·04 for the United Kingdom for 1859 and 1860. Admissions then are still in *excess* of the home rate—deaths to strength a small fraction (0·019) lower, and deaths to treated 8·19 per cent. lower.

Order 3, Diseases of the Respiratory System.

In the returns the figures stand—

Asthma P. C.	101	cases with	1 death.
Bronchitis Acuta	21	,,	0 ,,
Do. Chronic	27	,,	1 ,,
Catarrhus Acutus	811	,,	8 ,,
Do. Chronic	109	,,	3 ,,
Dyspnœa Continua	27	,,	1 ,,
Pertussis	4	,,	0 ,,
Pleuritis	29	,,	1 ,,
Pneumonia	212	,,	4 ,,
Epistasis	7	,,	0 ,,
Total...	1348		19

Admissions per 1,000 of strength ..... = 76·2
Deaths ,, ,, ... = 1·07
Do. ,, to admissions by disease of Respiratory organs..... 14·09
Admissions ,, to all admissions by disease. 44·5

Under "Tubercular" diseases it has been shown that of the above, 1 case of Asthma, 1 of Bronchitis, and 3 of Catarrhus were, in fact, instances of Phthisis. Hæmoptysis is also included in that class and order. But 4 deaths recorded above under "Catarrhus" really resulted from the rupture of aneurismal sacs. Removing these, there remain 1339 admissions referable to this order with 10 deaths, reducing the rate of admissions to strength to 75·6 per 1,000, deaths to strength to 0·56, and deaths to treated to 7·47.

The following table is compiled with a view to comparison.

Table shewing the rates per cent. of Admissions and Mortality by Diseases of the Respiratory Organs.

"Commands," &c.	Authorities.	Ratio per cent. Admissions to Strength.	Deaths to Strength.	Deaths to Treated.
Bengal	Macpherson	6·43	·038	3·12
United Kingdom	Army Medical Reports 1859.	10·34	0·125	1·23
Do.	Do. 1860.	11·75	0·204	1·74
Bengal	Do. ,,	6 95	0·092	1·32
Madras	Do. ,,	5·42	0·037	0·69
Bombay	Do. ,,	6·03	0·105	1·74
2nd E. L. I.	From 1840 to 1860.	7·56	0·056	0·74

In the whole of India for 1860 the rates are 6·53, 0·085, 1·30.
For the United Kingdom for 1859 & 1860 11·06, 0·166, 1·50.

The admissions to strength are 4·53 per cent. *less* in India than in the United Kingdom; deaths to strength 0·081 per cent. less; while deaths to treated are 0·20 less.

In the 2nd E. L. I. the proportion of admissions to strength is slightly in excess of that derived from other sources for India, but much below that for the United Kingdom in 1859 and 1860. The deaths to strength are lower than by the Army Medical Returns for all India in 1860, but slightly in excess of that for the Madras Presidency. Deaths to *treated* are considerably lower than for all India by the Army Medical returns, but closely approximate the rate assigned for this, the Madras, Presidency.

These results are simply what we should have anticipated.

The small mortality attending Pneumonia is worthy of note, as illustrating the infrequency of the disease in India, for although by the light of the autopsy reports 2 cases—one of "Hepatitis,"* and one of "Catarrhus"—can be added to the list of casualties by this disease, the death-rate *to "treated"* is only raised to 2·8 per cent., while amongst troops in the United Kingdom for 1859 the mortality was as high as 11·57, and in 1860, 16·06 per cent.

ORDER 4, *Diseases of Digestive System.*

Hepatitis	861	cases with	21	deaths.
Icterus	52	„	1	„
Colic	351	„	0	„
Dyspepsia	642	„	2	„
Enteritis	10	„	1	„
Gastritis	183	„	2	„
Hæmatemesis	6	„	1	„
Obstipatio	342	„	3	„
Peritonitis	7	„	2	„
Pyrosis	4	„	0	„
Splenitis	79	„	0	„
Total...	2537		33	

* Pneumonia of lower lobe of right lung, terminating in abscess or purulent infiltration, is not infrequently mistaken for Hepatic abscess evacuating itself through the diaphragm. Diagnosis is difficult, but in two cases which recently occurred in my own practice, in one the diagnosis was established by detecting Hepatic gland cells in the sputum, and in the other by their *absence*, and the absence also of *chlorides* in the *urine*.

Of the above 33 casualties, 21 occur under the head of "Hepatitis." It will presently be shown that other deaths must be carried to the account of Hepatic disease. In the meantime, as an "order," diseases of the digestive system furnish the following results—

Admissions per 1,000 of strength.....	=	143·30
Deaths „ „ „	=	1·86
Do. „ of admissions by the order...		13·00

But by the autopsy reports I find that two out of three deaths by "*Obstipatio*," both the deaths by "*Dyspepsia*," and one by "*Gastritis*" resulted from Hepatic disease,—Abscess in four instances, Cirrhosis with Ascites in the fifth. These added to "Hepatitis," raise the cases to 866 and the deaths to 26.

But this even does not show the extent to which Hepatic disease has contributed to the mortality of the Regiment, for independent of the cases of Dysentery associated with Hepatic abscess (before alluded to) *Hepatic abscess* is found in one case of "Continued Fever" and "*Cirrhosis*," in one death recorded under "Ebrietas" and one under "Cachexia Syphilitica.

It has already been stated that 52 cases of Hepatic *abscess* have been gleaned from the post-mortem records, so that 13·5 per cent. of fatal cases have been attended with abscess of the liver.

The ages at which 51 *of these Casualties took place is given below.*

Ages.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Deaths	1	5	3	2	3	3	2	4	5	3	2	3	4	1	1	2	2	1	1	2	0	0	0	0	1

Arranged Triennially.

Deaths	9	8	11	8	6	5	3	0	1

Arranged Quinquennially.

Deaths	14	17	11	8	1

Or to exhibit the results in the form adopted by Mr. Waring and for comparison with his deductions—

Up to 20 years of age	6 deaths	or 11·76	per cent.
From 21 to 25	„ 13	„ 25·49	„
„ 26 to 30	„ 17	„ 33·33	„
„ 31 to 35	„ 10	„ 19·60	„
„ 36 to 40	„ 4	„ 7·84	„
Above 40	„ 1	„ 1·96	„

These figures differ from those resulting from Mr. Waring's cases. The *general* result is, however, much the same. "*The larger number of fatal cases occur between the ages* of 20 and 30." By Mr. Waring's table the proportion is about one-half or in the ratio of 112 to 115. In the 2nd E. L. I. it is as 36 to 15. After the age of 30 the number of deaths gradually decrease.

The *length of residence in India* as influencing the proclivity to Hepatic abscess has been shewn by Dr. Waring to have an important bearing.

More than 50 per cent. of his fatal cases perished within the first four years, and a larger number died in the *first* year's residence than during the 10 years between 10 and 20 years of residence.

Table showing the Length of Residence of 50 *Fatal Cases of Hepatic Abscess in the* 2*nd E. L. I.*

Length of Service (years.)	Under one	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Deaths.....	9	3	6	5	3	2	0	0	1	3	5	5	4	2	1	0	0	1	0	0	0	0
Arranged Quinquennially.																						
	26				6				17					1								

In this Regiment the greatest number of deaths occurring under any one period of service are met with under one year's service, and arranged quinquennially more deaths occurred in the *first* quinquennial period, than in all the other periods put together—results which correspond broadly with those attained by Mr. Waring.

Both sets of observations warrant the opinion, that the risk of death by hepatic abscess is greatest in the first 5 years of service, that the risks decrease during the second period of 5 years, rise again in the third, and in the fourth are at the minimum.

Length of service, in fact, as Mr. Waring states, "confers a great immunity from suppuration of the liver."

All the principal classes of disease which have contributed most towards the sickness and mortality of the Regiment have now been touched upon.

It has been remarked that "the powers of mental digestion must be good for statistics to yield profit," and "that facts are stubborn things and require careful management, or they may do more harm than good to the system which they were intended to benefit."

At the commencement of this paper I stated that it was my intention to do no more than throw together the tables I had framed in instituting my inquiry into the Medical History of the Regiment for the period antecedent to that of my assumption of Medical charge.

I do not attempt to draw conclusions, but it may safely be averred that the figures and tables establish, that the general health of the Regiment has (even for this Presidency, which has always enjoyed a better reputation in its relations to the European constitution than its sisters of Bengal and Bombay) been very satisfactory.

The low rate of mortality is doubtless very much dependant upon the continued life of ease and comfort, which the Regiment has led *in garrison* and its exemption from the risks of field service.

The marked improvement in the health of the men, in late years, is a most gratifying fact, and there can be no question that improved sanitary relations, and especially *absence* of *overcrowding*, is the cause of this amelioration, and of the improvement in the health of European Troops in India generally.

I cannot illustrate this so fully as I could wish, as I do not possess the measurements of all the different barracks which the Regiment has occupied.

I can, however, do so as relates to "Trichinopoly," the barracks at which station the Regiment *twice* occupied. In

these two periods the barrack accommodation was very much the same—comprising a range of barracks enclosed within a quadrangular space, and a set of five detached or "temporary" barracks. From 1845 to 1849 the accommodation may be estimated roughly and approximately at 902,000 cubic feet. The average strength of the Regiment for the 5 years was 920 men, and the average rate of deaths in Hospital 24·60 per 1,000 of strength. The cubic space per man about 980* cubic feet.

During the second period of residence the space occupied by the men was fully 799,000 cubic feet, after provision made for school, &c. The average strength for the period 542, so that each man enjoyed about 1474 cubic feet of air, and the mortality for the period is 12·59 per 1,000, or one-half what it was from 1845 to 1849.

The evidence, then, is to my mind most conclusive, that overcrowding has been the principal cause of the high mortality which marks the records of this Regiment in the earlier, as compared with the more recent, periods of its history.

But this element of sickness and mortality is not prominently set forth in the reports.

Even when the Regiment was decimated by dysentery at Secunderabad, overcrowding was not advanced as one of the probable causes.

At the present time the same barracks (after having undergone however considerable improvements, especially in the matter of the latrines—formerly pestiferous cess-pools but now conserved upon the dry system) are held to be fit to accommodate a Regiment of European Cavalry about 500 strong, and the men are very healthy. When the 2nd E. L. I. occupied them the Regiment was close upon 1,000 strong!

So, again, at Bangalore, the old Infantry Barracks when occupied by this Regiment, were held to be capable of accommodating 1,000 men. More recently the Madras Fusiliers, when barely 700 strong, were considered too numerous for

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* This is quite approximate only, as I do not know how the men were really distributed. They had not, however, so much cubic space as is here shown, as provision had to be made for School room, &c.; still the figures will sufficiently prove the point under review. In the second period the information is more correct and definite.

these barracks to accommodate them, and one, if not two, companies were located in the Dragoon Barracks.

It is to this greater seggregation of the men, the larger *breathing room* enjoyed by each, that the reduction of mortality, in recent as compared with more remote periods, is *mainly* to be attributed;—a fact which still requires to be brought home to the authorities, who do not yet sufficiently insist upon the troops having the minimum of space laid down by the regulations, viz., 1,000 cubic feet, free of all encroachments by furniture, arms, and accoutrements.

But although laying so much stress upon overcrowding as the *main* cause of the high mortality marking the more remote periods of this Regiment's history; there is sufficient evidence borne upon the face of the "returns" to show that the earnest attention paid to sanitary measures of late years, has, combined with the better treatment of disease generally, much to do with the reduced mortality; and I feel confident that the future of our Medical statistics will prove that, provided the teachings and warnings of the past are not forgotten, the European soldier in this Presidency in times of peace, runs scarcely more risk to health and life, than attaches to troops serving in other parts of the globe; and that a *Hospital* mortality of 62·45 per 1,000, which Dr. Chevers has shewn to be "the average annual rate of mortality from all causes amongst men of H. M. and H. E. I. Co.'s European forces in the three Presidencies of India" since the commencement of the present century, will be looked upon as a painful record of past shortcomings in the care and preservation of the soldier's health.

COMMISSIONED OFFICERS.—A few lines must be devoted to the statistics of sickness and mortality amongst Commissioned officers.

Table B, appended, gives the following results.

Aggregate strength for the period		522·49
Total Admissions by Disease		964
,, Deaths with the Regiment		8
Of mean strength per 1,000	Admitted	1845·28
	Died	15·31
Accidental deaths		2
Died on sick leave		6
Total Deaths		16
Ratio of all deaths per 1,000 of strength.		30·62

The information "Died upon sick leave," is obtained from the "records of officers," a Regimental document, for the use of which I am indebted to the Regimental authorities.

The mortality amongst officers present with the Regiment is 15·31 per 1,000 of aggregate mean strength, or 4·79 per 1,000, lower than Dr. Chevers gives upon the authority of Mr. H. Macpherson, "the only one, Dr. Chevers writes, in which we can place implicit confidence," the period observed being for eight years ending 1853-54, and for the Bengal Presidency.

The mortality amongst the officers is, then, 6·38 per 1,000 less than that for the *men*.

This is doubtless due partly to the different (better) sanitary relations under which the officer lives, but mainly to the fact, that under sickness the officer enjoys to a much larger extent the advantages of change of air, and sick certificate to England.

Almost every really serious case of illness occurring amongst the class enjoys the benefit of change.

It will be observed that 8 deaths are recorded *with* the Regiment, but that 6 other casualties occurred amongst officers "absent on sick certificate." This raises the mortality to 26·79 per 1,000, a rate within *(in excess of)* 0·31 of that from deaths *in* and *out* of Hospital amongst Non-commissioned officers and soldiers, while, if we add the 2 accidental deaths, the rate is raised to 30·62 for 1,000, or 1·14 in excess of that of the men.

I think it however probable, that all the deaths which occurred amongst Non-commissioned officers and soldiers on sick leave, or while absent from their Regiment, are not exhibited in the Medical returns, and consequently that the *out of* Hospital mortality is not altogether trustworthy; at any rate not so reliable as that amongst the officers, as I have been able to trace from the Regimental records the history of every individual.

From the first formation of the Regiment up to the close of 1860, 101 officers joined or were posted to it—of these 16 died, 5 were invalided, 20 "retired," and 13 exchanged to other Regiments.

The 8 deaths with the Regiment are recorded under Pneumonia 1, Hepatitis 1, Febris Remittens 1, Varix 1 Bronchitis 1, Variola 1, Ulcus 1, and Dyspepsia 1.

On consulting the annual reports with a view to determine the nature of casualties returned as *Ulcus, Varix,* and *Dyspepsia,* I am disappointed to find no allusion to them.

In bringing this statistical paper to a conclusion, I would again remark that it professes to be no more than a numerical analysis of the figured returns.

I have derived much pleasure and profit from the perusal of the "reports," many of which are of high interest and value, and which, had I been writing a Medical history of the Regiment, would have been largely and profitably quoted.

The low rate of *Hospital* mortality, when compared with that which recent enquiries have fixed, as that pertaining to European troops in India and in this Presidency, must be a matter of sincere gratification to those Medical officers who have been in Medical charge of the Regiment, and had their recommendations and representations been at all times readily and cheerfully accepted and acted upon, and due deference paid to the opinions which their knowledge and special training justified their expressing, it may be affirmed, without fear of contradiction, that a still higher standard of health would have resulted.

An amusing correspondence is found upon record illustrating the Surgeon's position but a few years back, the difficulties with which he had to contend, and indignities even to submit to in his efforts to determine the causes of sickness, and the influence of certain agencies upon health. A remnant of the old spirit which dictated the reply "Medical opinions are very good, Sir, when they are called for," or the more emphatic but less polite reply made to a suggestion "I'll be d—d if I do."

But brighter days have dawned upon the soldier and upon all ranks.

Commanding officers are themselves mastering the principles of sanitary science and applying their knowledge to the health and efficiency of armies, and are consequently more ready to accept, appreciate, and act upon the representations of their Medical "*advisers,*" and the results may be traced in the diminished mortality which marks the recent returns of our European troops not only in India, but over the whole world.

TABLE A.

Exhibiting the Strength, Admissions, and Deaths, from all causes in the 2nd European Light Infantry, from the date of its formation in the year 1839 till the close of the year 1860.

Non-Commissioned Officers, Rank and File.

YEARS.	1840		1841		1842		1843		1844		1845		1846		1847		1848		1849		1850-51		1851-52		1852-53		1853-54		1854-55		1855-56		1856-57		1857-58		1858-59		1859-60		Nine months. 1860.		Aggregates and Averages.	
Stations occupied	Arcot 10 months, Bangalore, 2 months.		Bangalore.		Bangalore.		Bangalore.		Bangalore.		Trichinopoly.		Trichinopoly.		Trichinopoly.		Trichinopoly.		Trichinopoly.		Secunderabad.		Secunderabad.		Secunderabad.		Secunderabad 10 mths., Jubbulpore 2 mths., line of march, Madras 1 m.		Madras and Sea.		Tonghoo.		Tonghoo.		Sea, Madras, and Trichinopoly.		Trichinopoly.		Trichinopoly.					
Mean Annual Strength	513·3		838½		1011		938· 5		899·11		850½		842½		945·5		1044·4		1030·5		980·9		988·75		964·2		905		790		894		862		778·41		699·33		466·83		461		17703·71	
Total Admissions into Hospital	1354		1546		1606		1049		911		1506		1366		1844		2156		1963		1663		1958		1781		1580		1574		1461		1021		1156		1182		934		667		30,278	
Total Deaths from Diseases	27		13		37		14		9		36		15		12		19		33		22		62		5		12		11		14		11		10		4		7		384	
Of mean Strength { Admitted	2637·83		1843 76		1588·52		1117·74		1013 22		1770 72		1621·84		1950·29		2064·34		1904·90		1695·39		1980·27		1847·12		1745·85		1992·40		1634·22		1184·45		1485·08		1690·18		2000·72		1422·17		1698·97
per 1,000. { Died	52·60		15·50		36·59		14·91		10 00		42 32		17·80		12·69		18·19		32·02		22·43		62·70		5·18		13·25		13·92		12·30		16·24		14·13		14·29		8·57		14·92		21·69
Average daily sick	40		60		57¼		40 1-6th		32		54		49 7-12th		63¼		85		68¼		59¼		76		67¼		65		56		58		48		35		63		34		32		54·4	

Diseases arranged according to the Statistical Nosology for the period.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers	Febris Ephemera	62	0	55	0	33	1	32	0	29	0	201	0	161	3	263	1	141	1	156	0	121	0	38	0	75	0	88	0	56	0	69	0	30	0	44	0	49	0	93	0	31	0	1827	6
	,, Quotid. Inter	23	0	43	0	46	0	31	0	6	1	139	0	62	0	122	1	262	0	317	2	154	1	127	0	144	0	73	0	255	0	117	0	117	0	92	0	75	0	87	0	58	0	2359	5
	,, Tertiana ,,	1	0	0	0	0	0	0	0	0	0	7	0	13	0	17	0	33	0	20	0	51	0	27	0	8	0	4	0	8	0	14	0	1	0	0	0	9	0	9	0	7	0	229	0
	,, Quartana ,,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	,, Remittens	1	0	1	0	0	0	4	0	1	0	250	7	26	0	8	0	8	0	6	0	3	0	21	0	9	0	3	0	7	0	4	0	19	1	3	0	6	0	8	0	8	0	396	8
	,, Continua Com	9	0	7	0	0	0	5	2	19	1	23	1	12	2	30	1	15	2	14	0	0	0	2	0	3	1	1	0	0	0	4	1	0	0	1	0	14	0	20	0	7	0	186	11
	,, ,, Icterod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Eruptive Fevers	Rubeola	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	1	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	16	0
	Scarlatina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Variola	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	8	0	12	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	24	1
	Varicella	1	0	1	0	4	0	0	0	2	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	13	0
	Vaccinia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Diseases of the Lungs and Air Passages	Asthma Period. Conv	2	0	3	0	4	0	2	0	1	0	2	0	5	0	6	3	12	0	9	1	4	0	4	0	5	0	3	0	10	0	9	0	7	0	2	0	8	0	1	0	2	0	101	1
	Bronchitis Acuta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	4	0	0	0	0	0	1	0	1	0	1	0	0	0	1	0	2	0	1	0	3	0	3	0	3	0	21	0
	,, Chronic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	11	0	3	0	1	1	0	0	1	0	0	0	1	0	6	0	0	0	1	0	3	0	1	0	0	0	27	1
	Catarrhus Acutus	36	0	28	0	22	0	34	0	21	0	18	0	21	0	33	0	60	1	44	0	79	2	62	1	65	0	68	1	50	0	71	2	38	0	30	1	0	0	16	0	15	0	811	8
	,, Chronic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	1	0	0	0	4	1	1	0	1	0	3	1	1	0	19	1	8	0	4	0	47	0	8	0	0	0	109	3
	Dyspnœa Contiu.	0	0	0	0	1	0	0	0	4	0	0	0	4	0	8	0	6	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	27	1
	Epistaxis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	7	0
	Hæmoptysis	1	0	0	0	1	0	1	0	0	0	5	0	2	0	3	1	2	1	1	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	21	3
	Pertussis	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0
	Phthisis Pulm. Tuber	0	0	0	0	1	0	1	0	0	0	0	0	6	0	1	0	4	0	2	1	1	0	0	0	2	0	2	0	0	0	1	1	1	0	1	0	0	0	2	0	1	0	24	5
	Pleuritis	0	0	0	0	0	0	0	0	0	0	0	0	4	0	6	0	0	0	0	0	3	0	3	1	3	0	0	0	0	0	3	0	1	0	0	0	4	0	1	0	1	0	29	1
	Pneumonia	3	0	4	0	5	1	4	0	2	0	8	0	10	0	6	0	25	0	28	0	25	0	26	0	19	0	7	0	7	0	17	2	11	1	2	0	0	0	1	0	0	0	212	4
Diseases of the Circulatory System	Aneurisma	0	0	0	0	0	0	0	0	0	0	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5	2
	Angina Pectoris	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
	Carditis	0	0	0	0	2	1	0	0	0	0	2	0	41	0	139	1	16	0	2	2	2	1	0	0	1	0	1	0	4	1	3	0	1	1	4	0	1	0	3	0	1	1	222	8
	Palpitatio	8	0	8	0	7	1	9	0	18	0	13	0	13	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	3	0	3	0	83	1
Diseases of the Liver	Hepatitis Acuta	19	0	45	4	43	1	41	0	20	0	27	2	33	0	25	0	10	0	13	0	7	0	39	4	35	0	21	0	22	2	15	0	33	1	37	0	24	0	17	0	6	0	599	15
	,, Chronica	6	0	2	0	3	0	12	0	17	0	25	1	34	1	30	0	31	0	12	2	14	0	23	0	23	1	23	1	24	0	11	0	4	0	7	0	9	0	9	0	3	0	322	6
	Icterus	1	0	5	0	15	0	1	0	0	0	2	0	0	0	0	0	0	0	2	0	4	0	6	0	2	0	2	0	2	0	0	0	0	0	4	1	2	0	0	0	0	0	52	1
Diseases of the Stomach and Bowels	Colica	5	0	1	0	4	0	4	0	1	0	16	0	28	0	8	0	13	0	7	0	11	0	26	0	22	0	30	0	33	0	46	0	17	0	20	0	33	0	12	0	5	0	351	0
	Diarrhœa	87	0	25	1	62	4	24	0	18	0	58	1	92	1	79	2	156	11	47	2	51	2	40	0	25	0	23	0	67	1	86	0	82	1	54	0	20	0	56	1	1190	27
	Dysenteria Acuta	75	3	80	7	101	1	76	8	67	4	110	8	33	0	72	5	67	2	112	7	162	8	408	49	178	2	149	1	205	3	73	0	142	2	100	2	47	2	27	3	8	0	2292	122
	,, Chronica	5	0	2	0	36	3	18	1	8	0	26	4	24	1	13	0	25	2	9	1	5	0	0	0	1	0	0	0	1	0	3	0	0	0	7	0	4	0	2	0	0	0	189	12
	Dyspepsia	20	0	10	0	6	0	17	0	20	0	34	1	25	0	37	0	33	0	22	0	22	0	19	0	18	0	12	0	9	0	28	0	42	0	77	0	82	0	83	0	26	1	642	2
	Enteritis	2	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	10	1
	Gastritis	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	6	0	7	0	30	1	44	0	23	0	17	0	24	0	16	1	12	0	1	0	1	0	0	0	0	0	183	2
	Hæmatemesis	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	6	1
	Obstipatio	9	0	4	1	6	0	4	0	8	0	8	0	13	0	11	1	21	0	23	0	29	1	44	0	44	0	24	0	19	0	20	0	18	0	29	0	1	0	4	0	2	0	342	3
	Peritonitis	3	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	7	2
	Pyrosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	0
	Apoplexia	3	4	0	0	0	0	0	0	1	1	7	6	3	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	18	15
	Cephalalgia	27	0	6	0	10	0	26	0	51	0	66	0	82	0	64	0	111	0	65	0	47	0	47	0	51	0	56	0	52	0	46	1	39	0	43	0	19	0	11	0	3	0	922	1
Diseases of the Brain	Delirium Tremens	0	0	0	0	1	0	2	0	2	0	1	0	0	0	0	0	4	0	39	0	44	0	102	0	78	0	82	0	55	0	20	0	0	0	13	0	33	0	28	0	15	0	519	0
	Ictus Solis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	3	1	1	0	2	1	1	1	1	1	3	2	13	6
	Paralysis	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	4	0	4	1	6	0	8	0	5	0	2	0	2	0	2	1	4	2	0	0	2	0	3	0	1	0	46	4
	Other diseases	7	0	3	0	4	0	5	0	5	0	0	0	10	0	16	0	11	0	3	0	10	0	10	0	17	0	4	0	8	0	6	0	3	0	3	0	9	0	8	0	10	0	152	0
Cholera	Cholera Morbus	44	20	0	0	23	16	0	0	0	0	9	5	8	4	2	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89	47
	,, Epidemica	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	4	0	0	0	1	0	0	0	2	1	4	0	0	0	1	1	0	0	0	0	0	0	44	10
Dropsies	Anasarca	3	0	2	0	0	0	0	0	0	0	0	0	2	0	2	0	3	1	6	0	0	0	1	1	1	0	2	1	5	1	1	1	1	0	2	0	1	0	1	0	0	0	33	6
	Ascites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	4	3
	Beri-Beri	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	Hydrothorax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Rheumatic Affections	Rheumatism Ac	12	0	63	0	61	0	50	0	34	0	12	0	24	0	51	0	41	0	29	0	38	0	39	0	39	0	68	0	45	0	34	0	52	1	33	1	5	0	4	0	0	0	736	2
	Other diseases	16	0	41	0	49	0	24	0	32	0	37	0	52	0	106	0	82	0	51	0	64	0	59	0	42	0	42	0	36	0	62	0	29	0	26	0	39	0	31	0	24	0	935	0
Venereal Affections and Diseases of the Genital Organs	Bubo Simplex	53	0	136	0	121	1	53	0	46	0	43	0	62	0	52	0	54	0	57	0	48	0	31	0	50	0	32	0	42	0	27	0	5	0	13	0	45	0	32	0	3	0	1005	1
	Gonorrhœa	131	0	163	0	164	0	72	0	93	0	95	0	89	0	102	0	69	0	119	2	116	0	120	0	141	0	145	0	120	0	74	0	6	0	33	0	137	0	75	0	64	0	2128	0
	Syphilis Principiva	117	0	381	0	360	2	182	0	96	0	50	0	47	0	59	0	61	1	113	0	75	0	83	0	75	0	72	0	76	0	73	0	8	0	24	0	46	0	30	0	29	0	2057	3
	,, Consecutiva	3	0	13	0	13	0	8	0	6	0	5	0	9	0	25	0	20	0	14	1	15	1	4	0	7	0	8	0	8	0	5	0	3	1	11	0	11	0	3	0	0	0	191	3
	Other diseases	1	0	1	0	4	0	1	0	4	0	7	0	19	0	60	0	38	0	29	0	53	0	34	0	38	0	26	0	20	0	27	0	7	0	34	0	27	0	15	0	18	0	469	0
Abscesses and Ulcers	Abscessus in Perin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Fistula in Ano	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	4	0
	,, in Perin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Phlegmon et Absc	0	0	0	0	0	0	0	0	0	0	1	0	83	0	156	0	127	0	63	0	63	0	31	0	29	0	19	0	93	0	42	0	26	0	67	0	43	0	28	1	876	1
	Ulcus	211	0	118	0	86	1	51	0	45	0	57	0	66	0	46	0	81	1	29	0	35	0	30	0	36	0	31	0	20	0	42	0	72	0	68	0	37	0	27	0	45	0	1233	2
	Other diseases	136	0	57	0	50	0	30	0	21	0	25	0	39	0	8	0	13	0	9	0	2	0	5	0	4	0	2	0	2	0	5	0	4	0	4	0	6	0	23	0	23	0	459	0
Wounds and Injuries	Concussio Cerebri	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	3	0
	Fractura	1	0	0	0	3	0	3	0	4	0	0	0	0	0	2	0	3	0	0	0	6	0	3	0	6	0	6	0	5	0	4	0	3	0	6	0	7	0	3	0	4	0	72	0
	Vulnus Incisum	6	0	16	0	17	0	14	0	13	0	4	0	8	0	8	0	6	0	8	0	11	0	16	0	8	0	19	0	11	0	10	0	12	0	24	0	19	0	14	0	9	0	253	1
	Other injuries	52	0	60	0	72	0	90	0	55	0	40	0	51	0	147	0	134	0	80	0	96	0	127	0	142	0	130	0	83	0	101	0	43	0	106	0	52	0	36	0	27	0	1724	0
Punished	Punitus	11	0	20	0	14	0	2	0	8	0	7	0	2	0	0	0	0	0	1	0	6	0	8	0	3	0	3	0	11	0	3	0	9	0	11	0	6	0	1	0	0	0	126	0
Diseases of the Eyes	Ophthalmia	25	0	52	0	45	0	49	0	20	0	124	0	47	0	64	0	41	0	41	0	19	0	27	0	29	0	19	0	34	0	34	0	16	0	16	0	33	0	26	0	32	0	794	0
	Other diseases	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	2	0	5	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	3	0	18	0
Diseases of the Skin	Psora	54	0	10	0	3	0	8	0	7	0	18	0	6	0	12	0	2	0	22	0	10	0	6	0	4	0	6	0

TABLE B.

Exhibiting the Strength, Sickness, and Mortality, from all causes in the 2nd European Light Infantry, for the years 1840 to 1860, inclusive.

Commissioned Officers.

YEARS.	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850-51	1851-52	1852-53	1853-54	1854-55	1855-56	1856-57	1857-58	1858-59	1859-60	1860	Total.
Mean Annual Strength	21·16	26	28	30·09	28	26·59	27	28	19·66	21·41	24·50	25	26·15	23·75	17·17	26	20·36	18·66	23·33	29·33	32·33	522·49
Total Admissions	26	63	60	90	63	45	57	79	56	47	42	54	37	35	26	23	28	18	32	37	46	964
Total Deaths from diseases	0	0	1	1	0	0	2	0	0	2	0	1	0	1	0	0	0	0	0	0	0	8
Transferred Sick	3	2	5	6	6	2	6	6	7	6	2	6	0	0	0	1	2	0	1	0	0	65
Of mean Strength per 1,000... Admitted	122·8	2423·3	2142·3	2991·	2250	1692·3	2111·1	2821·4	2848·4	2195·2	1714·2	2160	1412·5	1473·6	1514·2	884·6	1375·3	964·6	0131·6	1261·5	1422·5	1845·28
Of mean Strength per 1,000... Died	0	0	35·71	33·23	0	0	74·07	0	0	93·4	0	40·	0	42·10	0	0	0	0	7	0	0	15·31

Classes of Diseases.	Specific Diseases.	1840 Adm.	1840 Died.	1841 Adm.	1841 Died.	1842 Adm.	1842 Died.	1843 Adm.	1843 Died.	1844 Adm.	1844 Died.	1845 Adm.	1845 Died.	1846 Adm.	1846 Died.	1847 Adm.	1847 Died.	1848 Adm.	1848 Died.	1849 Adm.	1849 Died.	1850-51 Adm.	1850-51 Died.	1851-52 Adm.	1851-52 Died.	1852-53 Adm.	1852-53 Died.	1853-54 Adm.	1853-54 Died.	1854-55 Adm.	1854-55 Died.	1855-56 Adm.	1855-56 Died.	1856-57 Adm.	1856-57 Died.	1857-58 Adm.	1857-58 Died.	1858-59 Adm.	1858-59 Died.	1859-60 Adm.	1859-60 Died.	1860 Adm.	1860 Died.	Total Adm.	Total Died.
Fevers	Febris Ephemera	4	...	14	...	12	...	28	...	7	...	18	...	18	...	4	...	5	...	5	...	2	...	4	...	9	...	2	...	2	...	...	...	1	...	5	...	4	...	8	...	9	...	161	...
	„ Quotid Inter	1	...	1	...	4	..	3	...	9	...	1	...	...	...	1	...	4	...	3	...	...	..	3	...	4	...	1	...	4	...	2	...	2	...	1	...	2	...	2	...	7	...	55	...
	„ Tertian „	...	...	...	...	3	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	6	..
	„ Remittens	...	...	...	...	...	...	...	...	1	...	1	...	2	1	...	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	8	1
	„ Contin. Com	...	...	...	...	...	...	2	...	1	...	...	...	..	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	..	...	..	..	1	...	1	...	7	...
Eruptive Fevers	Vaccinia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
	Variola	...	...	...	...	...	...	..	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	1	..	...	...	..	...	...	...	...	..	...	...	...	3	1
	Asthma Period. Con	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	2	...	2	...	1	...	5	...	...	...	...	...	...	...	2	...	...	...	...	...	2	...	...	...	...	...	15	...
	Bronchitis	1	...	2	...	1	...	2	...	3	...	...	...	1	1	5	...	4	...	1	...	2	...	7	...	1	...	5	...	1	...	...	...	...	...	...	...	...	...	2	...	1	...	39	1
	Phthisis Pulm. Tub	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Diseases of the Lungs	Pleuritis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
	Pneumonia	...	...	...	...	1	1	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
	Other diseases	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Diseases of the Liver	Hepatitis	...	...	...	...	...	..	4	1	...	...	...	...	1	...	2	...	2	...	...	...	1	...	1	...	...	...	...	...	1	...	..	...	...	...	...	...	1	...	...	...	13	1
Diseases of the Stomach and Bowels	Diarrhœa	1	...	4	...	2	...	4	...	7	...	2	...	3	...	1	...	5	...	4	...	2	...	1	...	...	...	2	...	1	...	...	...	1	...	...	...	5	...	2	...	1	...	48	..
	Dysentery	...	...	2	...	...	..	1	...	...	...	...	...	...	...	5	...	2	...	2	...	1	...	..	...	...	...	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	16	..
	Dyspepsia	2	...	3	...	7	...	11	...	5	...	10	...	12	...	21	...	3	...	7	1	6	...	4	...	...	...	3	...	3	...	1	...	2	...	1	...	5	...	9	..	1	...	116	1
	Other diseases	3	...	4	...	5	...	3	...	4	...	2	...	...	...	3	...	3	...	3	...	3	...	2	...	...	...	2	...	3	...	...	...	...	..	2	...	...	...	...	...	...	...	42	...
Diseases of the Brain	Delirium Tremens	..	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	..	..	...	...	...	...	...	...	4	..
	Mania	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	..	..	...	...	...	...	...	...	2	...
	Other diseases	2	...	9	..	1	..	1	..	1	...	...	...	1	...	7	...	2	...	3	...	6	...	2	...	1	...	1	...	2	...	1	...	3	...	...	...	...	...	...	...	1	...	44	...
Rheumatic Affections	Rheumatism	...	...	1	..	4	..	3	..	1	...	..	...	2	...	2	...	2	...	1	...	3	...	1	...	4	...	2	...	1	...	...	...	1	...	2	...	...	...	1	...	2	...	33	...
Venereal Affections and Diseases of the Genital Organs	Bubo Simplex	2	...	2	...	1	...	1	...	4	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	18	..
	Gonorrhœa	4	...	2	...	...	...	4	...	3	...	...	...	3	...	1	...	...	...	...	...	...	...	2	...	2	...	2	...	...	...	...	...	1	...	1	...	...	...	4	...	2	..	31	...
	Syphilis Primit	2	...	2	...	3	...	...	...	1	...	...	...	...	...	5	...	...	...	...	...	1	..	...	...	1	...	1	...	2	...	...	...	...	...	1	...	...	...	...	...	1	...	19	...
	Other diseases	...	...	1	...	...	...	...	...	...	...	2	..	1	...	4	...	...	...	1	...	...	...	1	...	1	...	...	...	1	...	...	...	3	..	...	...	...	...	...	...	2	...	17	...
Abscesses and Ulcers	Furunculus	...	...	1	...	1	...	5	...	...	...	1	...	1	...	4	...	4	...	2	...	...	...	4	...	1	...	2	...	1	...	3	...	1	..	1	...	6	...	1	...	5	...	44	...
	Ulcus	1	..	4	...	2	...	3	...	4	...	1	...	...	...	3	...	4	...	6	1	2	...	1	...	...	...	...	...	...	...	2	...	3	..	1	...	1	...	2	...	4	...	44	1
	Other diseases	...	...	...	...	...	..	1	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	2	...	10	..
Wounds and Injuries		1	...	3	..	9	...	9	...	5	...	4	...	5	...	3	...	4	...	4	...	2	...	6	...	5	...	3	...	1	...	4	...	5	...	3	...	3	...	1	...	4	...	84	..
All other diseases	Dysecœa	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	..
	Lepra	...	...	...	..	..	...	..	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Scrofula	...	...	...	...	...	...	..	...	..	...	...	...	...	...	...	...	...	...	1	...	...	..	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	3	...
	Varix	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
	Other diseases	2	...	8	...	4	...	4	...	4	...	1	...	5	...	2	...	7	...	1	...	5	...	7	...	7	...	3	...	...	...	2	...	4	...	1	...	2	...	...	...	3	...	72	...
Total		26	...	63	...	60	1	90	1	63	...	45	...	57	2	79	..	56	...	47	2	42	...	54	1	37	...	35	1	26	...	23	...	28	...	18	...	32	...	37	...	46	...	964	8
Died on Sick Certificate or from accident		...	...	...	..	..	...	...	...	...	...	...	*1	...	...	...	2	...	†1	...	...	...	...	...	..	...	...	...	1	...	...	...	1	...	...	...	...	...	2	..	...	...	...	8
Total		26	...	63	...	60	1	90	1	63	...	45	1	57	2	79	2	56	1	47	2	42	..	54	1	37	..	35	2	26	...	23	1	28	..	18	..	32	2	37	...	46	...	964	16

* One drowned.

† Drowned.

Art. II.—*Report on an out-break of Cholera occurring amongst the Prisoners in Calicut Jail, in March,* 1863. By Robert E. Pearse, Acting Civil Surgeon, Malabar.

(Communicated by the Principal Inspector General, Medical Department.)

The out-break of the late Epidemic of Cholera was announced to you by my predecessor under date of 19th March, and further by myself on the 28th of the same month.

The Cholera made its first appearance in the Jail on the 17th March, two cases occurring on that day, one of which proved rapidly fatal (in about two hours); and it continued steadily to increase up to the 22nd, when the number of admissions rose to 19. A slight subsidence then occurred for a day or two, only to increase again on the 26th and 27th, when it reached its climax, both in severity (every case admitted on the 26th proving fatal) and also in the actual number of admissions (19 on the 27th). From this time, however, it steadily diminished, some of the later cases being of a comparatively mild type, the last admission occurring on the 4th April, and was strangely enough a very severe and speedily fatal case.

The proportion and percentage of deaths and recoveries to admissions are shown in the accompanying Tabular Statement.

Table of Admissions, Deaths, and Recoveries.

Date of Admission.	Number of Admissions.	Number of Deaths.	Number of Recoveries.	Percentage of Deaths to Admissions.
1863.				
March 17th ...	2	1	1	50·
„ 18th ...	3	2	1	66·66
„ 19th ...	15	11	4	73·33
„ 20th ...	11	7	4	63·63
„ 21st ...	10	7	3	70·
„ 22nd ...	19	16	3	84·21
„ 23rd ...	13	7	6	53·84
„ 24th ...	6	3	3	50·
„ 25th ...	11	7	4	63·63

Date of Admission.	Number of Admissions.	Number of Deaths.	Number of Recoveries.	Per centage of Deaths to Admissions.
1863.				
March 26th ...	7	7	0	100·
„ 27th ...	19	16	3	84·21
„ 28th ...	2	0	2	0·
„ 29th ...	11	3	8	27·27
„ 30th ...	4	2	2	50·
„ 31st ...	1	0	1	0·
April 1st ...	3	1	2	33·33
„ 2nd ...	1	0	1	0·
„ 3rd ...	1	0	1	0·
„ 4th ...	1	1	0	100·
	140	91	49	65

Results.—Admissions..... 140

Deaths..... 91 or 65 per cent.

Recoveries..... 49 or 35 „

Deaths up to the 27th... 72·41 „

„ subsequent to.... 29·16 „

As regards the general character of the symptoms on admission, in the greater proportion of cases the collapse was sudden and extreme, the patients being brought in, a few minutes after seizure, perfectly cold and pulseless, and passing their evacuations involuntarily ; these being not the usual rice water stool, but apparently the clear, watery, colorless serum of the blood. From this stage of extreme collapse, in the majority of cases, nothing served in the least degree to rouse them or produce any effect—the patients gradually dying exhausted in the course of a few hours. Vomiting, on the whole, was not an usual or urgent symptom, and in the majority of cases abated or disappeared under treatment. Cramps, as a symptom, too were almost entirely absent, not occurring in more than a very small proportion of the cases, and in those not with their usual violence. The rate of mortality, notwithstanding the absence of many of the most marked symptoms of the disease, was still very high—65 per cent.; attributable—1st, to the severe type which the disease assumed ; 2nd, to the generally debilitated

condition of the prisoners at the time; and lastly, to the comparatively small number of slight cases occurring during the subsidence of the attack, the admissions after the 27th being only 24, with a mortality of 7 or less than 30 per cent.

The measures adopted to arrest the epidemic were as follows. All the patients at the time in the Jail Hospital were at once removed to a building at the back part of the Jail itself, thus leaving the former building free to be used as a Cholera Hospital alone; and, it being situated at about a half mile from the Jail, Munzils were supplied on requisition for conveying the sick from the one to the other, as the walk was found to be highly injurious. A sufficient staff of orderlies, from amongst the prisoners themselves, was also obtained (with some little difficulty) for the double purpose of attending on the sick and of conveying away all evacuations, which were received into vessels containing charcoal, and buried at a considerable distance from the Hospital itself on the Beach; and the wards themselves were kept as pure as possible by disinfectants, burning charcoal, Benzoine, &c. Again, the Medical Subordinate at the Jail Hospital (3rd Class Asst. Paul) being very young and inexperienced, application was made to the Collector for the services of his Dresser, 1st Dresser Allegiah, which was acceded to, and he accordingly joined from Cochin on the 27th. On the 26th, with the approbation of the Acting Inspector General of Hospitals, who was here at the time, I directed Dr. Pulney Andy of the Vaccine Department to report himself also for duty at the Jail (Cholera) Hospital, assigning the day duty to him and the night duty to Dresser Allegiah (Assistant Paul being quite exhausted by a week of continuous labor). The remaining sick, placed in the building in rear of the Jail, were temporarily attended to by the Dresser (2nd Dresser Ailsworth) in charge of the Civil Dispensary. With respect to the prisoners generally all hard labor was at once put a stop to, and the diet improved by the substitution of meat for fish,—at first three times a week, and afterwards given daily,—producing, after a short time, a marked improvement in the appearance of the men generally. At the same time application was made to the Civil Authorities to have the whole of the prisoners removed from the Jail for a time;—this however could only be effected in part, by about seventy men being sent to Poodiangady Jail, about

5 miles from this, and another hundred located in the new Small-pox Hospital on the Beach (not yet quite completed, but sufficiently so to be quite fit for use on any emergency like the present); by this means allowing for deaths, sick in Hospital, &c., only about (120) a hundred and twenty were left in the Jail itself. To remove these men also I applied for the new Leper Hospital, another building precisely similar to the Small-pox one mentioned above, but the application was refused on the ground that the Police were unable to furnish the necessary guards; they therefore remained in the Jail, and, on the cessation of the epidemic, by confining them to one half of the building, I was enabled to have the whole thoroughly cleaned and whitewashed (half at a time) before returning those located at the Small-pox Hospital into it again. The batch at Poodiangady still remains there, as if returned now, just at the commencement of the judicial recess of two months, the Jail would inevitably again become overcrowded before the expiration of that period.

The medicinal treatment adopted was the following. Immediately on admission, a half tumbler of strong hot brandy and water, with Cayenne added, was given to endeavour to rouse the system slightly, and the usual hot water bottles, sinapisms, &c., applied to the surface: after which, the general plan adopted was the administering alternately, at intervals ranging from half an hour upwards, the following Pill and Mixture.

℞ Hydrag. Chlor.
Plumb. Acet. āā gr. ii.
Comphoræ.
Pulv. Capsici āā gr. i.
Opii. gr. ¼. M. ft. Pilula.

℞ Chloroform ♏ x.
Tinct. Opii. ♏ x.
Sp. Ammon. Aromat. ʒ ss.
Sodæ Sesquicarb. gr. x.
Aq. Menth. Piper. ad. ℥ iss. M. ft. Haustus.

The chloroform, as before remarked, seemed to exercise a marked effect in arresting the vomiting, indeed treatment often arrested the more prominent symptoms in whole or in

part; but the real difficulty lay not in doing this, but in arousing the patient from the extreme collapse into which he had sunk immediately on the supervention of the attack, and here all remedies seemed alike unavailing. The following measures and remedies were also tried in a limited number of cases each—Calomel and Ex-Cannabis in combination; Exts. Cannabis alone; Saltwater enemata and draughts; Quassine, and Counter-irritation down the entire length of the spinal column (in combination with internal remedies of course); but all these cases, with the exception of one of those treated by Ext. Cannabis alone, proved fatal. They were all average cases in point of severity, but selected with some regard to the character of the actual symptoms on admission, as bearing upon the class of remedies which it was proposed to administer. Brandy was also administered pretty largely and appeared to have more effect in rousing the patients from the state of coma than any other medicine. The mineral acid tonics and a nutritive diet were given during convalescence, only two relapses occurring throughout. With the exception of scrobutic swellings of the lower extremities which have been very common, the sequelæ during convalescence have been neither numerous nor severe, viz., one or two cases of diarrhœa (chr.) and congestion of the lungs, all of which have, however, terminated favorably.

In conclusion I would beg to offer a few observations on the causes of this epidemic. These causes are evidently two in number, viz., insufficient diet, and overcrowding. On the first of these causes I shall not enlarge,—it having been fully discussed by Dr. Wyndowe in his letter dated 16th March 1863, proposing a new scale of diet in lieu of that now in use—beyond remarking, that practically the truth of its insufficiency was evidenced by the large number of convalescents who suffered from scrobutic affections, and the marked improvement observable in the prisoners generally when placed on a more liberal diet on the breaking out of the epidemic. Several cases of scurvy had also presented themselves at the Hospital, evidently due to deficient nutrition previous to the breaking out of the cholera. Under these circumstances it is curious to find that length of imprisonment, except in very old cases (5 years and upwards) influenced the rate of mortality very slightly, and even here the numbers are too small to furnish any satisfactory conclusions (vide annexed table.)

Table of Mortality according to length of Confinement.

	Admissions.	Deaths.	Percentage of Deaths.	Recoveries.	Per centag of Recoveries.
Under 1 year.....	80	54	67·5	26	32·5
Above 1 year & under 2 years..	27	18	66·6	9	33·3
„ 2 „ 3 „	11	10	90·90	1	09·09
„ 3 „ 4 „	8	4	50·	4	50·
„ 4 „ 5 „	3	2	66·6	1	33·3
„ 5 „ 6 „	2	1	50·	1	50·
„ 6 „ 7 „	5	1	20·	4	80·
Above 7 years.....	4	1	25·	3	75·

Here the percentage under 3 years is 69·49, whilst that above that period is 40·45—a difference worthy of some notice when we consider that the older prisoners are most probably also the older men.

Then as to the second cause, overcrowding. It appears, from measurements of the several wards, that allowing only cubic feet 350 per man (a low estimate), the Jail can accommodate only 274, whilst on the night preceding the outbreak the actual number was 419, or 145 in excess of the highest estimate compatible with health. Again, owing to the manner in which the Jail is built, the actual supply of air is not so great as these measurements would indicate, for the outer wall being 12 feet high and having an interval of only 10 feet between it and the wards in which the prisoners sleep, the air cannot be renewed at a rate sufficiently rapid to compensate for its deterioration by respiration ;—whilst the iron grating facing the sea, by means of which ventilation is principally carried on, faces the central space between the two blocks of sleeping rooms, which themselves present only blank walls on this aspect.

In connection with this part of the subject it is worthy of notice, that room No. 1, though situated at the end furthest removed from the sea and ventilation, being alloted to the cooks, carpenters and blacksmiths, (who are shut in later and released earlier than the other convicts, thus allowing less actual time for sleep,) the proportionate numbers being as high if not higher than the other rooms, only afforded a single case of cholera, and that in a man on duty

at the Cholera Hospital at the time"; and it is at all times remarkable as being more healthy than any of the other rooms.

It appears to me that the prejudicial effects of the high wall might easily be obviated by substituting open iron work for solid brick in the upper four feet, which I have accordingly brought to the notice of the Civil Authorities. With this exception the cleanliness, general arrangements, and ventilation of the building appear all that can be desired.

Calicut, *April* 21*st*, 1863.

Art. III.—*The Tests of Constitutional Syphilis.* By Assistant Surgeon W. C. Brodrick, M.D., L.R.C.P., Ed. Agency Surgeon, Indore.

In No. X. of the *Madras Quarterly Journal*, I recommended to readers the employment of certain means of diagnosis whereby to ascertain the existence of acquired syphilitic taint, in cases where such relation might be unsuspected by the medical attendant, and denied by the patient.

In the present paper I propose to exhibit a series of cases, the first sixty-two that I have noted since the publication of previous remarks, not selected with a view to establish my peculiar views, but taken in the order in which they presented themselves for treatment and honestly reported.

I hope that these will justify the confidence with which I offered the previous remarks, and that they will serve to recommend my "tests for syphilis" to the profession more than unsupported assertions can ever be expected to do.

The repulsive appearance of all tabulated cases will, I fear, deter many who see these pages from wading painfully through them, but the adoption of such a plan is unavoidable, and it will be seen that I have made them all as brief as I could possibly do.

The nomenclature I adopt may be strange to readers unfamiliar with the writings of the French Syphilographers: and here I will take the opportunity to correct an error that crept into my earlier remarks, when I used the term *adenite* (misprinted adenito) instead of *adenopathy*. *Adenite* is more correctly an acute bubo, acute lymphangitis, whilst *adenopathy* is the term used by Ricord to denote a *cold*

painless induration of lymphatic glands, where the cellular investment of the gland and even the glandular parenchyma itself is the seat of a plastic deposit.

These hard glandular tumours are moveable under the finger, are free from tenderness, and when present in the inguinal region, and often in the cervical, and co-existent with other symptoms, are strongly indicative of syphilitic taint.

When they are numerous they are styled "Multiple," and take the name "inguinal," "cervical," "submaxillary," according to their sites.

The term substernal tenderness (which the *Friend of India* converts into "*substantial*") is philologically incorrect, for the tenderness is rather over the sternum, it might be styled "episternal," but as it is now recognized by its older name we may as well keep to the older one. It is simply a degree of periosteal inflammation of the sternum, a sternal node.

"*Syphilidis*" I have used to denote the special syphilitic skin disease: the other terms need no comment.

CASES.

No.	Name and Caste.	Age.	Syphilitic Indications.	Duration of Do.	Date of Primaries.
1	Adil Shere Khan, Mussulman.	22	Indurated cicatrices of chancres on prepuce and glans; gonorrhœa; parotitis; general substernal tenderness. Multiple inguinal and ant. cervical adenopathies.		
2	Deo, a widow.	35	Chancres and indurated cicatrices of labia; substernal tenderness upper 3rd of bone; nocturnal rheumatoid pains; anterior cervical adenopathy.	.....	1 month?
3	Booria, infant.	1½	General dyscrasic appearance; a puny child; violet colored maculæ of surface; destruction of right eye from purulent ophthalmia; ulcers of scalp; bloody discharge from nose; flattening of nose; very feeble voice; fissures and excoriations about the anus.		

No.	Name and Caste.	Age.	Syphilitic indication.	Duration of Do.	Date of Primaries.
4	The mother of the above infant—wife of a camel driver.	40	Multiple inguinal adenopathy of right side. Has been married 25 years and has had 9 children, of whom 6 have died young.	.....	*Thinks* that her husband once had syphilis.
5	Phukkur, Brahmin, (a wrestler).	30	Multiple inguinal and anterior and posterior cervical adenopathies. Substernal tenderness at commencement of inferior 3rd of the bone.	.....	3 months ago.
6	Kistnah, Mahratta.	30	Large sore on left buttock. Multiple bi-inguinal and anterior cervical adenopathies. General substernal tenderness.	.....	2 years ago.
7	Keysoo Rao, Mahratta.	26	Ulceration of soft palate; general erythema of palate; excessive substernal tenderness over manubrium and lower 3rd of bone. Multiple inguinal and marked posterior cervical adenopathies.	9 years at intervals.	Over [illegible] years.
8	Rukub Doss.	26	Hemiplegia, ptosis and deafness; faint papular syphilidis of brow (corona veneris.); substernal tenderness over manubrium and inferior third of bone. Multiple inguinal and ant. and post. cervical adenopathies.	.....	4 months ago.
9	Narrayen, Brahmin.	25	Node of right side frontal bone; node of left tibia; circumorbital periosteal pains; general substernal tenderness. Multiple inguinal and ant. and post. cervical adenopathies.	.....	12 years ago.
10	Kashee Ram, Mahratta.	18	Diffused syphilidis (papular), unhealed chancre; extensive condylomata about the anus; substernal tenderness lower 3rd of bone. Multiple inguinal and ant. and post. cervical adenopathies.	.....	14 months ago; never healed.
11	Govindah, Mahr.	25	Rheumatoid nocturnal pains; extreme substernal tenderness; node at junction of manubrium with middle 3rd of bone. Multiple inguinal and ant. and post. cervical adenopathies.	.....	18 months ago.

No.	Name and Caste.	Age.	Syphilitic Indications.	Duration of Do.	Date of Primaries.
12	Puras Ram, Mahratta.	16	Paraphimosis and chancres of one month's duration; great chancrous infiltration of prepuce: substernal tenderness of lower 3rd of bone. Multiple inguinal and post. cervical adenopathies.		
13	Govind Row, Mahratta.	18	Chancres; chancrous infiltration of prepuce; substernal tenderness in lower part of middle 3rd and whole of lower 3rd. Multiple inguinal adenopathy.	.....	1 month.
14	Jeswunt Row, Mahratta.	26	Open bubo; sores healed 6 weeks' ago, but has some new ulcerations; substernal tenderness of lower 3rd of bone. Multiple inguinal, and very marked ant: and post: cervical adenopathies.		
15	Urjoon Doss, Mahajan.	24	Half healed chancre; chancrous infiltration of prepuce; substernal tenderness lower 3rd of bone. Multiple inguinal and ant. cervical adenopathies.	.....	5 months. ago.
16	Inyat Ali, Mussulman.	23	Superficial ulcers of hard palate; unhealed chancres; general substernal tenderness; tenderness over bridge of nose. Multiple inguinal and ant. and post. cervical adenopathies.	.....	1 month ago.
17	Tarnee Churun, Kyath	30	Pain and tenderness about nasal bones; node on left tibia; substernal tenderness. Multiple inguinal and post. cervical adenopathies.	.....	2 years ago.
18	Govind, Gowalla...	...	Syphilitic lepra of most aggravated character; general substernal tenderness, most acute in lower 3rd of bone. Multiple inguinal and post cervical adenopathies.		
19	ShamuKhan, Mussulman.	28	Syphilitic excoriations and aphthæ on palate, pharynx and buccal mucous membrane; no substernal tenderness. Multiple inguinal and ant. cervical adenopathies.	.....	38 days ago.

No.	Name and Caste.	Age.	Syphilitic Indications.	Duration of Do.	Date of Primaries.
20	Chaoola, Loonar...	40	Node on right clavicle; snuffling voice; sinking in of bridge of nose; general substernal tenderness. Multiple inguinal and ant. cervical adenopathies.		
21	Govind Row, Mahratta.	...	Symmetrical syphilidis (prurigo)of both buttocks; substernal tenderness commencement of lower 3rd of bone. Multiple inguinal adenopathy,	....	14 months ago.
22	Gopal Chunder, Kayath.	26	Papular syphilidis scattered over back and arms. Multiple inguinal adenopathy. General substernal tenderness.	.....	2½ years ago.
23	Sultan, Bohwa.....	28	Congestion and thickening of Schneiderian membrane; loss of smell; ozæna. Multiple bi-inguinal and marked post. cervical adenopathy.	2 years.	
24	Damoodur Punt, Dekkan, Pundit.	27	Lepra syphilitica; ulcers on hard and soft palate; excessive substernal tenderness; ant. and post. cervical adenopathies; a large chronic abscess in upper 3rd of right thigh.....	.....	3 years ago.
25	Girdhur, Rajpoot..	26	Destruction of penis from phagedæna; rheumatoid pains; excessive substernal tenderness. Multiple inguinal and ant. and post. cervical adenopathies.		
26	Mungul, Mahratta.	30	Destruction of part of nose; rheumatoid pains. Multiple inguinal and post. cervical adenopathies. Substernal tenderness.	.....	10years ago.
27	Bhobootie, Kohar..	20	Suppurated bubo. Multiple inguinal adenopathy of opposite side; post. cervical adenopathy; substernal tenderness of lower 3rd.	.....	2½ mhs. ago.
28	Munohur Doss, Byrafee.	30	Large pustular ecthymata, like sycosis of upper lip, alæ nari, angles of mouth and chin; cicatrices of tonsils; lepra of arms and legs; substernal tenderness of lower end of middle 3rd of bone. Multiple bi-inguinal and ant. and post. cervical adenopathies.	.....	4mohs. ago

No.	Name and Caste.	Age.	Syphilitic indications.	Duration of Do.	Date of Primaries.
29	Munguljee, Buneah	30	Exostosis (eburnated node) of right metacarpus; rheumatoid pains; excessive substernal tenderness. Multiple bi-inguinal and ant and post. cervical adenopathies.		
30	Jowahir, Carpenter.	32	3 Infecting chancres of prepuce. Multiple bi-ingunial and ant. and post. cervical adenopathies	.....	3 mhs. ago.
31	Seiwa, Sais..... ...	25	Aphthous ulcers of mouth; substernal tenderness middle 3rd of bone. Multiple inguinal and post. cervical adenopathies		
32	Dugroo, Dungur...	20	Rheumatoid pains; substernal tenderness over manubrium and inferior 3rd of bone. Multiple inguinal and post. cervical adenopathies.	.....	1 year ago.
33	Mootoosawmy, Shareewan.	30	Rheumatoid pains; substernal tenderness lower 3rd of bone. Multiple inguinal and ant. and post. cervical adenopathies		
34	Gimesh, Buneah...	30	Destruction of velun palati and hard palate; inflammation and suppuration about nasal bones; substernal tenderness lower 3rd of bone. Multiple inguinal and post. cervical adenopathies.	.....	2 years ago.
35	Lalla Bhow, Pundit.	30	Syphilitic ecthymata (annually developed); substernal tenderness upper and lower 3rd of bone. Multiple inguinal and post. cervical adenopathies.	.....	6 years ago.
36	Mukand Rao, Mahratta.	40	Rupia; general substernal tenderness, extreme in lower 3rd of bone. Multiple inginal and post. cervical adenopathies..... ...	.....	7 years ago.
37	Nusseef Bund, (woman) Mussulmani.	18	Syphilitic lepra; chancres of vulva; general severe substernal tenderness. Enormous multiple bi-inguinal adenopathies, anterior cervical adenopathies.		

No.	Name and Caste.	Age.	Syphilitic Indications.	Duration of Do.	Date of Primaries.
38	Amrootic, Rajputni	20	A sore of upper lip, extending from ¼ inch to right side of mesial line to ½ inch external to angle of mouth with everted edges and parchment like induration of base; general health good; submaxillary and sublingual adenopathies; excessive substernal tenderness lower 3rd and lower part of middle 3rd of bone. Multiple bi-inguinal and ant. and post. cervical adenopathies.	5 mhs. ago, first noticed a pimple of upper lip.	
39	Lochun, Kshuttreah.	9	Phimosis; general chancrous infiltration of prepuce; condylomata of anus; substernal tenderness of upper third of bone; very marked post. cervical and multiple bi-inguinal adenopathies.	3 mhs. ago.	
40	Oonkar (brother to Lochun, No. 39).	2	Condylomata of anus	3 months.	
41	Gunga Singh, elder brother of 39&40.	20	Rheumatoid pains in shoulders, knees, ankles and wrists; cicatrices of sores of penis (prepuce). Multiple bi-inguinal and ant. and post. cervical adenopathies; substernal tenderness.	.....	Confesses to a bubo one year ago.
42	Seeta Ram, Kahar.	35	Laryngitis; substernal tenderness. Multiple bi-inguinal and ant. and post. cervical adenopathies	.....	2 years ago.
43	D—T—, Irishman Gunner.	30	Sore throat; suffered from this often; plantar psoriasis; excessive substernal tenderness. Multiple bi-inguinal and slight ant. and post. cervical adenopathies.	.....	9 mhs. ago.
44	C. W., private in H. M. 72nd Highlanders.	28	Rheumatoid pains; general severe substernal tenderness. Multiple bi-inguinal and ant. and post. cervical adenopathies.	Suffered from secondaries in 1854 & again 2½ mhs. ago.	9 years ago.
45	Motee, Gosainee, (at Oojein).	40	Tertiary syphilis in most aggravated form; whole body seared with scars; nose flattened and sunk; very large sores of legs; extreme general substernal tenderness. *No adenopathies.*	5 years.	

No.	Name and Caste.	Age.	Syphilitic Indications.	Duration of Do.	Date of Primaries.
46	SheikhIda, Durzee.	30	Node over tuberosity of left tibia; suppurated node lower part of same leg; general substernal tenderness. Multiple bi-inguinal and ant. cervical adenopathies.	.....	12 yrs. ago.
47	Lutchman Singh, Thakoor.	20	Primary sore with phimosis; papulæ of trunk and arms; extreme substernal tenderness. Multiple bi-inguinal and ant. cervical adenopathies.		
48	Bhowanee Singh, Brahmin.	50	Tertiary syphilis; large ulcerated cleft of palate on left of the mesial line; sycosis menti; ulcerated Schneiderian membrane and atrophied alæ nasi; extreme substernal tenderness; double inguinal adenopathy.		
49	Nusserwanjee, Parsee servant.	20	Severe nocturnal sciatic pains; papular syphilidis diffused; extreme substernal tenderness; extreme bi-inguinal multiple adenopathy.	6 weeks.....	18 months.
50	Sheikh Munnoo, Duftery.	25	Primary sores with hard bases, half healed; papular syphilidis; substernal tenderness. Multiple bi-inguinal adenopathy and ant. cervical adenopathy.	Syphilidis 10 days ...	1 month?
51	Ram Lall, Kyath..	38	Indolent ulcers of left leg with *violet* colored margins and *violet* stains of integument; substernal tenderness; extreme bi-inguinal and slight ant. and post. cervical adenopathies.	.....	20 years ago?
52	Bhyroo, Rajpoot..	25	Extensive ulceration and necrosis of palate; erythema of velum; enlarged tonsils; slight substernal tenderness in lower 3rd of bone. Multiple bi-inguinal and ant. and post. cervical adenopathies.	3 months...	4 years.
53	Heera Lall, Bhat (Chutterpoor)	25	Epilepsy for 5 years; substernal tenderness. Multiple bi-inguinal adenopathy, and ant. and post. cervical do.		

No.	Name and Caste.	Age.	Syphilitic Indications.	Duration of Do.	Date of Primaries.
54	Lodi, Brahmin. ...	40	Painful node on right side frontal bone; excessive substernal tenderness over middle and lower 3rd of bone; extreme multiple bi-inguinal and marked ant. cervical adenopathies.	Frontal node 12 days ago?.	10 years ago ?
55	Prubhakur, Brahmin.	30	Deep excavated ulcer of palate; substernal tenderness; scars of severe syphilitic ulcerations of neck. Multiple bi-inguinal adenopathies.	.....	5 or 6 years ago ?
56	Ram Singh, Thakoor, a Sipahi in Bhopal Levy.	25	Papular syphilidis all over body; sore throat; erythema of tonsils and soft palate; foul breath; severe substernal tenderness; rheumatoid pains in knees. Multiple inguinal adenopathy of right side, on left side is an inflamed acute bubo, and there is a fresh soft chancre of the prepuce.	Equivocates	
57	Rada, Girl.....	14	Whole body covered with violet stained lepra; substernal tenderness and node of sternal end of left clavicle. Multiple bi-inguinal adenopathy, & ant. & post. cervical do.; primary sores of vulva still open; has never menstruated.	2 months.	
58	Rumzan Khan, Mussulman.	30	Sanious discharge from nostrils; cephalæa; substernal tenderness at junction of upper and middle 3rd of bone where there is a node. Multiple bi-inguinal and ant. and post. cervical adenopathies.	.....	2 years.
59	Keysoo, Brahmin...	21	Sore throat; erythema of; velum, and tonsils; very bad phimosis; with enormous serous infiltration of the prepuce; acute lymphangite of right side. Multiple adenopathy of opposite side; ant. cervical do.; excessive substernal tenderness.	.....	1½ months.

No.	Name and Caste.	Age.	Syphilitic Indications.	Duration of Do.	Date of Primaries.
60	Chance Lall, Bunneah, (a wrestler.)	20	Syphilitic sore throat; tonsils seamed with scars; large condylomata of anus; substernal tenderness lower 3rd of bone, very marked; multiple bi-inguinal and ant. and post. cervical adenopathies.	Sore throat 18 months ago.	21 months.
61	Mahadeo Bhut, Brahmin.	40	Chancre; circumcised phimosis; ptyalism; rheumatoid pains; excessive substernal tenderness; large multiple bi-inguinal adenopathies.	....	4 months.
62	Hurr Narrayen, Brahmin.	30	Ulcer of lower tarsal cartilage; falling in of the nose; partial destruction of right ala nasi; partial deafness; Huge cavernous ulceration of palate and gums; almost complete aphonia; tenderness of larynx to pressure; excessive substernal tenderness. Multiple bi-inguinal adenopathy.	....	8 or 9 years.

ANALYSIS OF CASES.

In 56, out of the 62, cases substernal tenderness was present in a greater or less degree; it was absent in 5 only, viz., in case 3, of congenital syphilis in an infant 18 months old, and in case 4, of the mother of the same infant. It was absent again in case 19, that of Shama Khan, where the other indications of secondary syphilis had been present for 38 days only. Absent too in case 23, that of Sultan of the Bohora caste, where other unequivocal symptoms proved clearly the venereal origin of disease in the nose, ozæna and loss of the sense of smell. Lastly, it was absent in case 41, of Gunga Singh, where there were present other reliable evidences of constitutional syphilis.

Some of these cases were of great interest, and I will now proceed to discuss the most striking of them.

Case 8, of Rukub Dass, disappeared from our wards, I regret to say, before complete amendment had taken place in the symptoms. He was suffering from hemiplegia, ptosis and deafness, the syphilitic origin of which was

suggested by the presence of substernal tenderness, papular syphilidis, and multiple inguinal and anterior and posterior cervical adenopathies. I concluded from this that the hemiplegia and other symptoms of diseased innervation arose from syphilitic osteophytes of the inner table of the skull, and this diagnosis seemed likely to be confirmed by the man's recovery under specific treatment, with iodide of potassium and the proto-iodide of mercury, under which he rapidly improved, when he suddenly left the hospital and has not since returned.

Case 53, was one of epilepsy of five years duration, which I was induced (by the discovery of substernal tenderness and bi-inguinal and anterior and posterior cervical adenopathies) to ascribe to osteophyte of the inner table of the skull. This man came into our camp in Bundelkund one day, but disappeared on the next, and was not seen again, I am sorry to say, for the case was very suggestive.*

It is very seldom that I encounter cases of epilepsy, but this disease may be more common in other parts of India. It would be very interesting to trace the occasional connection of such cases with internal osteophytes, a relation that might be ascertained by employing the test of substernal tenderness, and, as Ricord happily expresses it, by "*interrogating the glands.*"

Case 25, of Girdhur, a Rajpoot, is one where it is reported that the penis is destroyed by phagedæna, and that there are present rheumatoid pains, excessive substernal tenderness, multiple inguinal and anterior and posterior cervical adenopathies.

These secondary affections were not connected with the particular infection that had led to destruction of the penis. I believe that the hard based sore, the Hunterian or infecting sore as it is indifferently called, is never the seat of phagedænic complication. The history of the case probably was that of an infecting sore, which, after infecting the economy thoroughly, healed; and that subsequently the man contracted a soft and non-infecting sore (non-infectant of the *system* I mean of course) which, by neglect and ill treatment, took on phagedænic action.

In Case 27, of Bhobootie of the Kahar caste, there was a suppurated bubo of one side, whilst multiple inguinal ade-

* I was unable to discover the existence of "aura" in this case.

nopathy existed on the other side, and was conjoined with substernal tenderness and posterior cervical adenopathy.

Here there had been doubtless two separate infections, one producing specific acute lymphangitis, and the other the usual sequelæ of infecting chancre.

I believe the cold bubo attending an infecting sore never suppurates unless perhaps it were irritated from without into such a termination. The infecting sore produces plastic deposit in the glands it invades, the soft non-infecting sore produces acute lymphangitis which may suppurate and produce a pus, which under certain conditions shall be inoculable.

Case 56, of Ram Singh, Thakoor by caste, a Sipahi in the Bhopal Levy, is one where there were present papular syphilidis, sore throat (erythema of tonsils and soft palate, with characteristic foul breath), severe substernal tenderness, rheumatoid pains in bones and multiple inguinal adenopathy of *right* side. On the *left* side was an acute lymphangitis, and a soft chancre was detected on the prepuce. This was a new disease and quite distinct from the one that had infected the economy. The man denied previous disease, but his native officer informed us that he had suffered from syphilis some time before whilst at Head quarters at Lahore.

Case 59, of Keysoo, a Brahmin, is one in which there existed sore throat with husky voice, erythema of velum palati and tonsils, multiple inguinal adenopathy of *left* side, anterior cervical adenopathy and excessive substernal tenderness. At the same time he is suffering from soft chancre, phimosis with enormous serous infiltration of prepuce and acute lymphangitis of *right* side. This again is a story of two infections.

Case 38, is the one of Amrootic, a Rajputni. This was one of the most satisfactory cases I have ever had to treat. She was a very well nourished and healthy looking woman of 20 years of age, who presented herself on account of a large sore of the upper lip, extending from quarter of an inch to the right side of mesial line to half an inch exterior to the angle of the mouth, with everted edges, and presenting a hard base such as Ricord describes as the parchment like base of a sore (chancre parcheminèe). This in a young woman of notably healthy appearance, and nursing a very fine handsome boy, her child. What was this sore

of the upper lip? By careful search I made out submaxillary and sublingual adenopathies, and these led to the discovery of extreme substernal tenderness of lower third and lower part of middle third of the bone, and again to bi-inguinal multiple adenopathy and swellings of the anterior and posterior cervical glands. On cross examination the girl stated that five months before she had first noticed a pimple on the upper lip which had broken and spread to the present sore, that her husband had suffered from venereal six months back, and that, on this account, she had left him and returned to her parent's house. She denied having had connection with him subsequent to her discovering his diseased condition.

She had been married 8 years, and had had but one child, the one she was now nursing, a very fine lad of 18 months and very healthy.

Was this sore an oral-chancre or not? I believe it was, else it must have been a manifestation of secondary disease.

Now the very wholesome and well nourished aspect of both mother and child were arguments against the latter assumption; for they were incompatible with the existence of syphilitic dyscrasy so grave and so old in duration as to have led to destructive disease of a remote part such as the upper lip.

Had this sore been the localization of constitutional or systemic disease, it would have co-existed with the well known wasting, and, ill-nourished aspect of confirmed syphilis, and the offspring of the patient would have borne the impress of hereditary disease, or the aspect of a child fed upon the milk of a diseased parent.

I believe that this woman had been infected by her husband at the time she mentioned as having been the date of her discovery of his diseased state, and that a vaginal chancre produced the multiple inguinal adenopathies as the oral one gave rise to those of the submaxillary and sublingual glands.

Note the importance of the substernal tenderness (excessive in degree) in the chain of this diagnosis.

This sore of the lip had some of the characteristics of malignant disease, it had everted edges, a very indolent and suspicious general appearance, and it had contaminated the neighbouring glands. The detection of substernal ten-

derness and the cold inguinal swellings at once laid bare the actual state of the case.

Had any lingering doubt remained in my mind regarding the true nature of this disease, it would have been dispelled by the result of the specific treatment.

As I said above, this was one of the most completely satisfactory cases I ever treated. She was ordered one third of a grain of proto-iodide of mercury three times a day, and in four days the effects of the drug became evident. Day by day the sore healed and contracted until on the 35th day of specific treatment (when it had healed perfectly, leaving a scarcely perceptible cicatrix), she went home cured.

Cases 39, 40, 41, I will take together. 1st—Case 39 is that of Lochun, a boy only 9 years of age. This poor child was brought by his father to the Indore City Dispensary one day on account of what his parent called "bowasir,"—piles.

On examination I found very large moist condylomata about the anus of this boy, which again led to the discovery of phimosis and general chancrous infiltration of the prepuce which was as hard as Indian Rubber. The groins were occupied by very prominent multiple adenopathies, there were marked glandular swellings too in the posterior cervical region, and substernal tenderness in the upper third of the bone. There could not be a doubt of the nature of this most sickening case, which had been, according to the father's report, of some three months duration. He said that he believed the boy had contracted the disease by eating and drinking from the same vessels as those used by his uncle who *was* the subject of venereal disease.

A week or so after my first seeing this boy, he came up one day to the General Hospital in the Cantonment of Indore, in company with his elder brother Gunga Singh (case 41) who was 20 years of age, and who complained of rheumatoid pains in the joints. He had cicatrices of sores on the prepuce, and had multiple bi-inguinal and anterior and posterior cervical adenopathies.

He confessed, too, to a bubo which he had had 12 months ago, but denied other venereal antecedents.

In his arms he carried a still younger brother than Lochun, the child Oonkar *aged two years*, whom I found affected

with *condylomata* of the anus which the eldest brother said had existed for three months past, which were in fact synchronous with Lochun's disease.

I think these horrible cases need no comment.

Case 42 is that of Seeta Ram, a prisoner in the Indore jail, who suffered severely from syphilitic laryngitis, accompanied by multiple bi-inguinal and anterior and posterior cervical adenopathies and substernal tenderness. He made a very rapid recovery under specific treatment. The next two cases, 43 and 44, are the only cases of constitutional syphilis occurring in Europeans that I have met with since noting these cases. They did not present any extraordinary features of interest.

In case 45 there were no adenopathies present, the only case, this is, of the 62 reported on where there were no such indications. The patient, a woman aged 40, a Gosainee by caste, was a very horrible object, being the subject of most aggravated tertiary syphilis; her whole body was seamed with scars, her nose flattened and sunk, and her legs were the seat of enormous ulcerations :—

"From scalp to sole one slough and crust of Sin."*

In this case I believe that the disease had, in its destructive form, dissolved away the plastic indurations of the glands, had fused them as it were. The substernal tenderness, which was very extreme, was in a great measure produced by the tender cicatrices of many suppurated nodes of this bone.

I saw this wretched case in Oojein where syphilis is very prevalent.

Case 49, of Nusserwanjee, a Parsee servant, I had watched from the first onset of the disease, and had treated specifically 18 months ago. It was only the boy's reckless abandonment of all treatment that involved him in the sequelæ noted in the tables, namely, sciatic nocturnal pain, syphilidis, substernal tenderness and excessive bi-inguinal multiple adenopathy.

Case 54, that of Lodi, a Brahmin aged 40, I only allude to as it was an instance of the extraordinary rapidity with which that wonderful drug, iodide of potassium, will melt away a frontal node. In five days this man is translated

* St. Simeon Stylites.

from intolerable anguish to perfect ease by boldly pushing this medicine.

He had excessive substernal tenderness and extreme multiple bi-inguinal adenopathies, with marked ones too in the anterior cervical region.

Case 57 is that of Rada, a girl aged 14. Her whole body was covered with a most typical violet stained eruption of lepra, which alone made the cause of the disease a matter of certainty. She had substernal tenderness and a node at the sternal end of the left clavicle, also multiple bi-inguinal and anterior and posterior cervical adenopathies. She was also suffering from chancres of the vulva.

This poor child had been diseased by her husband, only two months back, who had himself been treated at our hospitals for primary syphilis only two months ago, when he stated that the sores had existed for four months. This is a case of what Ricord calls "Syphilis gallopante," where the symptoms suddenly and violently burst upon the patient; and here no doubt the rapid evolution of the sequelæ would result, in a measure, from repeated intercourse and consequent saturation of the system with the poison.

The last case, 62, is one of tertiary syphilis, in which partial deafness arises in a measure, I suppose, from invasion of the Eustachian tubes by the disease that has so cruelly ploughed up the palate and alveoli, as well as by pressure on the auditory apparatus from osteophytes. He presented also tenderness on pressure over the larynx and almost total aphonia.

These 62 cases have been collected within a few weeks; had I taken notes of each case seen earlier in my experience, I should have had hundreds to refer to.

But these will, I hope, suffice to show the frequency, the almost universality, of the tests I am endeavouring to make public.

The importance of these silent witnesses of syphilis in practice amongst natives can scarcely, I believe, be overrated, for it is most difficult to get Asiatics to confess to this disease when they can conceive any motive for concealment.

Many of my patients, after denying all knowledge of previous infection for some time, have given in after I have suggested to them symptoms that I feel sure they must have

experienced. This kind of knowledge, which is only the remembering and suggesting symptoms as they *ought to* occur, or ought to have occurred, in the ordinary evolution of syphilis, seems to the ignorant to be very wonderful, and they sometimes give up concealment as useless.

Others again have confessed on recovery.

A very strong argument in favour of a certain diagnosis is the recovery of your patient under specific treatment, this has been called the chemical test. If patients will submit to specific treatment for a sufficiently long time, when labouring under secondary syphilis, they are certain to improve, if the right medicines be prescribed, and their recovery is the chemical test.

I would remark that native patients though very consistently and dexterously untruthful (there existing motive for concealment or evasion, as for instance the impulse of shame) are unskilful facial actors; and if the countenance be carefully watched during the examination of the sternum, it will be found that the patient *winces* involuntarily when the finger point "interrogates" the tender spot.

I have been informed by several medical friends that they have not succeeded equally with myself in making out the existence of substernal tenderness in cases of syphilis.

It must be borne in mind that the proper method of palpation must be acquired with practice; very little force need be exerted to find the tender spot, but the bone must be very carefully examined and no point be left unexplored.

The palpation may be more difficult to some than others, just as percussion of the chest is to certain finger tips that nature did not adapt to such purpose.

Art. IV.—*Cases of Sudden Death from Fatty degeneration of the Heart, with Observations.* By John Shortt, M.D., Zillah Surgeon, Chingleput.

There is something appalling in a sudden death, more especially when the individual whose life is thus cut short was to all appearance in the enjoyment of health and vigour, and was never known to ail until death occurred and a *post-mortem* examination reveals the disease or immediate cause of death. Such cases are full of interest to the

Physician, but unfortunately beset with difficulties when unaccompanied by fatty degeneration of other organs, as the patient seldom comes under observation during his lifetime.

Perhaps there is no disease so obscure in its progress as fatty degeneration of the heart, occurring where least suspected. In rare instances it may be suspected in consequence of a morbid accumulation of fat, causing general obesity; or, as is the case when complicated, shewing unmistakable symptoms of degeneration from the feebleness of the heart's action, slow pulse, general debility, and anæmia, with a feeling of nervous exhaustion and well marked *arcus senilis*, a good instance of which I met the other day during a temporary stay on the Shervaroy Hills.

The following two cases are full of interest.

Case I.

A convicted Sepoy named Parrylaul, a Bengalee from Benares, was sentenced on the 7th July 1857 to five months imprisonment with hard labour, for some Military offence committed at St. Thomas' Mount. He was 25 years of age; 5 feet 10 inches in height, and weighed 155 lb. when received into this Jail; finding that he had to carry a basket on his head and to dig with the mahomety, he pretended to be mad and came into Hospital; I soon found out that he was feigning. He was discharged and threatened with punishment if he did not perform his allotted work quietly and satisfactorily, which he appears to have done, as he did not come before me again. On the night of the 17th November following he retired as usual and in apparent good health to his cell, but at about 1 A. M. he started from his sleep, screamed, and fell back dead; the Dresser saw him a few minutes after, but found him quite dead.

Post-mortem examination 8 *hours after death.*—Countenance calm; eyelids closed; surface of body clean and free from violence; body well nourished.

Head not examined.

Thorax.—On opening the thorax, had to cut through nearly an inch of sub-cutaneous adipose tissue. On removing the sternum the pericardium was found to contain two ounces of a clear serum. Heart covered with a layer of brownish yellow fat, nearly half an inch thick at the base, and thinning off towards the apex. Cavities empty;

heart weighed, free of its coverings, 14 ounces. The substance of a pale yellow color and the walls of the ventricles, more particularly those of the right, were unnaturally thin. The left auriculo-ventricular opening greatly dilated, admitting freely three fingers. The valves were healthy, except that of the aorta, which was slightly fringed with vegetation at its free margins. The lungs mottled, black and gorged with blood, but healthy.

Abdomen; much fat existed on the abdominal walls. The stomach was distended with a large quantity of undigested rice. Intestines contained some healthy feculent matter. The peritoneal surface of the intestines and parieties of the abdomen were tinged pink and the vessels rendered tortuous and prominent.

The kidneys were imbedded in nearly two inches of fat, healthy, but rather florid in color.

Liver large and gorged with blood; gall bladder contained healthy bile. Spleen larger than natural size and black.

Pelvis.—Bladder contained some healthy urine.

Case II.

In September 1861, a second death occurred at night in one of the cells. In this instance the prisoner was a Pariah, sentenced to seven years' imprisonment. He was named Komen, aged 35, 5 feet 4 inches in height, and on admission into the Jail, in November 1855, weighed 115 lbs. He was never sick to my knowledge, on the contrary had gained considerably in health and flesh.

On the night of the 22nd of September 1861, at about 1 A. M., started from his sleep, screamed and fell back dead; when seen, a few minutes afterwards, life was extinct.

He was in his usual health when he retired to his cell in the evening with the other prisoners, and from the statement of those in the same cell appears to have been lying on his back, when he screamed suddenly in his sleep, and as he started up to a sitting posture fell back and expired.

Post-mortem examination 8 hours after death.—The body is that of a strong muscular man, exceedingly well nourished; with an easy countenance; eyelids shut; surface of the body free of injuries or other marks of violence. Slight *post-mortem* rigidity present.

Thorax.—The external surface of the heart covered with

a layer of brownish colored fat nearly an inch thick at the base and extending towards the apex. Pericardium contained about 2 oz. of serum; cavities empty; valves healthy, except that the free margins of the mitral and aortic valves were slightly thickened. The right auriculo-ventricular opening dilated to some extent, so as to interfere with the integrity of the valves of that orifice.

Heart weighed 12 oz., structure soft and flabby, readily giving way under pressure of the fingers.

On making a microscopical examination, the substance was found infiltrated with fat globules, so completely destroying the structure that neither the longitudinal nor transverse markings of the muscular fibre were visible.

The lungs were engorged with dark blood, but healthy and free of adhesions.

Abdomen.—Abdominal walls were lined with much fat. Liver healthy looking, but much congested; gall bladder contained healthy bile. Kidneys healthy but imbedded in much fat. Spleen double the natural size and black, gorged with blood; stomach contained a quantity of half digested rice, and the alimentary canal was inflated with air.

Pelvis.—Bladder empty and contracted.

Observations.—From the history of these cases, and the results of the *post-mortem* examinations, it will at once become apparent that fatty degeneration of the heart was the immediate cause of death in both instances. The muscular structure of the heart being destroyed by the infiltration of the oil globules, interfered with its contractile power; this, aided by the pressure exerted by a distended stomach, and the favorable position of the patients for such an occurrence, brought it to a stand still. The sudden arrest of the functions of life, by the stoppage of the heart's action, started the men suddenly into a sitting posture; thus more completely favoring the arrest by the suddenness with which these movements were effected, and causing immediate death.

The two following cases are of special interest not only to the Physician, but also to the Medical Jurist.

Case III.

On the 9th of August 1858, at 7½ A. M., a requisition was received from the Head Assistant Magistrate of the district to proceed to the village of Atchhariwalk in the Tripporoor

Talook, about 10 miles distant from this, to examine the body of a Brahmin said to have lost his life in a fray.

Immediately proceeded to the spot, which I reached at half past 9 A. M. The body of the deceased, named Ramanooja Iyengar, was pointed out to me; found it in a high state of decomposition; the head and face greatly swollen and livid; the features partially defaced; mouth open, tongue greatly protruded and an oozing of bloody serum from the eyes, nose and mouth.

The trunk was slightly bloated and covered with vesications of lividity; abdomen tumid, and the cuticle detached from several parts of the trunk, more particularly from the the back.

The genitals were swollen and livid; anus open and protruding. The upper extremities were flexed on the chest and tied together by both thumbs, and the cuticle detached in several places, more especially about the wrists. The legs were tumified, slightly flexed and tied together by the great toes.

Sectio Cadaveris 12 *hours after death.*—The body, which was laid on its back on a bier formed of bamboo, was that of an adult male, about 44 years of age, of ordinary height and apparently well nourished. The head, in addition to the pigtail, was covered with short hair interspersed with gray, the beard was short and gray.

As far as I was able to ascertain in the decomposed state of the body no wound or other mark of injury was discoverable.

Thorax.—On opening the chest, which contained nearly a couple of inches of sub-cutaneous adipose tissue, the lungs were found emphysematous, and the right adherent to the parieties of the chest throughout its extent. The heart was loaded with fat (about the size of a bullock's), empty, and its structure partly disorganised; the valves, more particularly the mitral, were greatly thickened and puckered.

Abdomen.—The liver and spleen were completely disorganised; stomach contained a small quantity of undigested rice; the intestines were greatly distended with air and the abdominal walls and omentum loaded with masses of fat. The kidneys were healthy, but imbedded in much fat.

Pelvis.—Bladder empty and contracted.

History of the Case.—It would appear that Ramanooja

Iyengar was apparently in good health on the evening of the 8th August, about half past 5 P. M. While he was out looking after his ricefields, a dispute took place between himself and two other Brahmins, his kinsmen, about the distribution of water to the fields; when a struggle occurred. Shortly afterwards, Ramanooja Iyengar returned to the village and reported the circumstance of the quarrel to the village authorities, with a request that the same should be investigated the next day. At the time he bore no marks of personal violence nor did he complain of any injury. A little after 10 P. M., a report was brought to the effect, that shortly after his return home he suffered from some oppressive breathing, and at 10 P. M., fell back from his seat and expired.

Medical Opinion.—From the results of the *post-mortem* examination and the history of the case, I am of opinion that the deceased suffered from fatty degeneration of the heart, and disease of its valves, and that the excitement and struggle of the quarrel was indirectly the cause of death.

Case IV.

Durmaragoodoo, a convicted prisoner of the Gentoo caste, a native of Cocanada, merchant by trade, sentenced to 7 years' imprisonment for forgery, was received into this Jail by transfer on the 31st March 1857. Æt. 47, 6 feet in height, and weighing on admission 184 lbs. He was a stout, able bodied individual, and came under my observation from time to time in consequence of sponginess and absorption of the gums, and loosening of the teeth. He usually attended as an out-patient; his general health was apparently good; he never complained of it, and had worked at the looms during his incarceration in the Jail.

On the 4th of July 1862 he was admitted into Hospital in consequence of several wounds and contusions received early on the morning of the previous day in a quarrel with some of his fellow prisoners.

Has an incised wound just below the right knee joint, one inch in length, quarter in breadth, and half in depth. Has another on the tip of his nose, and several contusions about the head and face, and complains of pain in the right side of his chest.

On the 5th he complained of general stiffness of the body and pain of chest.

On the 6th had a paroxysm of fever preceded by rigors, complained of sickness of stomach, and not long after ejected a small quantity of bile and a large worm (ascaris lumbricoides) from the stomach.

On the 7th had an emetic which acted freely; no return of fever; but in the evening was seized with hiccup.

On the 8th the hiccup continued; passed a sleepless night; still complains of soreness in the chest, no particular part, for which he was dry-cupped and a mustard sinapism was applied to the epigastrium. In the evening the hiccup had abated after the mustard poultice, but he was feverish all day and somewhat incoherent in his speech; complained of thirst; breathing natural; skin hot; pulse slow and full; at 10 P. M., the breathing became hurried; the patient insensible; pupils dilated; pulse weak and intermittent; skin cold; swallowed without difficulty a stimulant draught, but gradually sank and expired at a quarter to 2 A. M.*

Sectio Cadaveris 8 *hours after death.—Head.*—On removing the scalp, a slight infiltration of blood was found in the cellular tissue of the skin, to the extent of an inch in circumference, over the left parietal protuberance. On opening the skull the brain was found quite natural and the ventricles were free of congestion or effusion.

Thorax.—On dividing the skin of the chest there were nearly 2 inches of sub-cutaneous adipose tissue present. A slight discoloration was observed on the third rib of right side at about an inch from the sternal end. On removing the sterum the lungs and their coverings were in a healthy state.

The heart was covered with a thick layer of fat extending from base to apex, and weighed 1 lb. free of its coverings. On opening the ventricles they were found empty and the aortic opening ossified and contracted to the size of a goose quill. The aortic valves were ossified and projected in the shape of small protuberances into the left auricle.

Abdomen.—On opening this cavity it was found lined with large masses of fat. Liver of natural color, and weighed 4 lbs., the gall bladder contained some healthy bile; spleen small and natural; stomach and intestines natural, but of a pale color; kidneys healthy, but imbedded in much fat.

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* This case was recorded by Mr. Apothecary Mathews during my temporary absence from the station.

Bladder empty and contracted. The body in general was of a pale color and extremely fat.

On reviewing these cases it would appear from the autopsy that death in each case resulted from fatty degeneration of the heart. In the first two cases life was suddenly and completely extinguished by the sudden cessation of the heart's action, aided by the imperfect state of the mitral valves, a distended stomach, favorable posture and sudden change of position. In the last two cases, although death may be said to have been caused by the infiltration of fat globules, and constriction of the auriculo-ventricular opening, it was no doubt expedited by the excitement of the system during the fray, with which the heart in its deteriorated state was unable to cope.

There can be little doubt, humanly speaking, that had these individuals continued to lead the calm easy lives they had previously done, avoiding unusual excitement, they might have lived some time longer, with the chance perhaps of having their lives terminated as abruptly as in the two first instances.

In the case of Durmarayoodoo, No. IV., it was not a sudden death, but I give it a place here because the chief disease was fatty degeneration of the structure of the heart, followed by ossification of the mitral valve and constriction of the right auriculo-ventricular opening. The injuries he received in the quarrel were not of a serious nature, but there can be no doubt of his death having been hastened by the fray in which he involved himself.

Art. V.—*On the Analysis of the Urine of Intermittent Fever.* By Edward Nicholson, F.C.S., Staff Assistant Surgeon, Calicut.

In May last year, one of the orderlies of my ward in Fort Pitt was seized with a fit of ague. He had contracted the disease in China, and had only landed at Chatham a few days previously. I found him lying down with the cold stage of ague just beginning. Being engaged at the time in some investigations on the state of the urine in tropical diseases, I took advantage of this case to make a careful analysis of the urine of the next twenty-four hours.

Private Fielding, Army Hospital Corps,

May 29th, 1862, 10 A. M.—Cold stage of ague just commenced. Temperature in axilla 104°; passed water about 15 minutes ago.

2-15 P. M.—Has just begun to sweat. Temperature 104·5.

Analysis of the urine of the Cold and Hot stages.

	$4\frac{1}{2}$ hours.	Per hour.
Quantity	100 cubic centimetres.	166 cubic centimetres.
Specific gravity	1009·7 do.	
Urea	8·400 grammes.	2·000 grammes.
Uric acid	None.	None.
Chloride of sodium	6·800 grammes.	1·600 grammes.
Phosphoric acid	0·070. do.	0·017 do.

5-50 P. M.—Has been sweating freely, and is beginning to feel comfortable. Temperature 102°.

Analysis of the urine of the sweating stage.

	$3\frac{1}{2}$ hours.	Per hour.
Quantity	480 cubic centimetres.	137 cubic centimetres.
Specific gravity	1008·4. do.	
Urea	5·760 grammes.	1·64 grammes.
Uric acid	None.	None.
Chloride of sodium	2·010 grammes.	0·576 grammes.
Phosphoric acid	0·048 do.	0·014 do.

10-30 P. M.—The fit of ague has quite left him. Feels languid.

Analysis of the urine of $4\frac{2}{3}$ hours after the sweating stage.

	$4\frac{2}{3}$ hours.	Per hour.
Quantity	1265 cubic centimetres.	275 cubic centimetres.
Specific gravity	1001·5 do.	
Urea	5·060 grammes.	1·100 grammes.
Uric acid	None.	None.
Chloride of sodium	1·075 grammes.	0·234 grammes.
Phosphoric acid	0·126 do.	0·027 do.

May 30th, 10 A.M.—Feels very languid, but has no febrile symptoms.

Analysis of the urine of the night after the attack of ague.

	$11\frac{1}{2}$ hours.	Per hour.
Quantity	1180 cubic centimetres.	102 cubic centimetres.
Specific gravity	1009 do.	
Urea	18·300 grammes.	1·590 grammes.
Uric acid	0·184 do.	0·017 do.
Chloride of sodium	2·420 do.	0·210 do.
Phosphoric acid	0·236 do.	0·0205 do.

That this condition of the urine is most remarkably abnormal is well evidenced by comparing the above analysis with the theoretical composition of the urine in this patient. This is obtained by multiplying the normal quantities of each constituent evacuated per hour per kilogramme, by the weight of the patient 54 kilogrammes (120 lbs).

Normal urinary excretion compared with that of ague.

	Fluid per hour.	Urea per hour.	Uric acid per hour.	Chloride of sodium per hour.	Phosphoric acid per hour.
	cub. cent.	grms.	grms.	grms.	grms.
Normal excretion of a man weight 54 kilos	40—50	1·200	0·019	0·330	0·110
Cold and hot stages	166	2·000	None.	1·600	0·017
Sweating stage	137	1·640	None.	0·576	0·014
Non-febrile hours, evening	275	1·100	None.	0·234	0·027
Do. do. night	102	1·590	0·017	0·210	0·0205

Owing to the pressure of time, incident on the performance of these analyses in an accurate manner, I was unable to estimate precisely the quantity of sulphuric acid. I can only state that its quantity was proportionate to that of the urea, as may be expected from the common source of the two substances. In the course of a large number of analyses I find that the proportion of sulphuric acid to urea is about 1 to 16·6, rising sometimes to 1 to 13 from an accidental ingestion of sulphates or of highly sulphuretted food.

The above table shows a great increase in the water, the urea, and the chloride of sodium. During the cold and hot stages the urea is nearly doubled, and the chloride of sodium is increased to five times the normal amount.

The increase of urea is common to all febrile diseases, and the remarkable increase of water and of chlorine has often been noticed. The principal points to which I would direct attention, as bearing both on physiology and on the pathology of ague, are the disappearance of uric acid during the whole of the day, and the remarkable decrease in the amount of phosphoric acid.

The history of uric acid is not yet sufficiently complete for me to hazard any conjectures as to the cause of its disappearance.

But what is especially worthy of attention is the diminution of the phosphoric acid to *one-eighth* of its normal amount, an amount which is not capricious or dependant on accidental circumstances like that of uric acid, but is regular, caused by well-defined and well-studied actions in the human body, and can be deduced from the weight of body, amount of food, work performed physical and mental.

The phosphoric acid in the urine proceeds from three sources, metamorphosis of osseous tissue, of muscular tissue, and of nervous tissue. Many considerations, amongst which is the great dependance of the amount of phosphoric acid excreted on the work performed by the nervous system, lead to the generally received conclusion that by far the greater part of the phosphoric acid proceeds from the metamorphosis of nervous tissue.*

Proceeding then, as phosphoric acid does, from the metamorphosis of nervous tissue, does not the diminution of phosphoric acid in the urine of ague, show that the disease is characterized by a depression, amounting nearly to paralysis, of some parts of the nervous system? I do not wish to enter too far into theoretical considerations, as these notes are rather intended as "memoirs to serve for the history" of ague, than as proposing a pathological theory. Without being a *chimiatre*, I believe that chemistry and therapeutics are often the best basis for pathological research, and I would observe that the pathology of the urine of ague, the cachexia, often mental as well as physical, conse-

* I may also mention that I have been informed on the best authority, that albumen prepared in a state of purity by Professor Graham's process of dialysis, does not contain phosphorus.

quent on malarious disease, and the class of remedies employed in this disease, all point to a paralysis of some parts of the nervous system. All the remedies used in ague belong to the stimulant section of the class Neurotica—wine, ammonia, zinc, chalybeates, arsenic, quinine, the vegetable bitters, coffee, and perhaps tannin.

Quinine has for the present dethroned arsenic and chalybeates from their high position in the treatment of ague, although they still continue to be the best remedies in chorea and neuralgia. The *modus operandi* of quinine in ague seems to be its power of augmenting the vital energy of the nervous system, and of enabling it to react against the paralysing effect of malaria. This property is shared, in a greater or lesser degree, by most of the stimulant neurotics, especially by zinc, iron, and arsenic; the remedial action of these medicines in chorea is clearly to give the nervous system energy to react against the disease and restore the muscles to a proper state of subordination.*

ART. VI.—*Seven Samples of Brandy analysed at the request of the Principal Inspector General, Medical Department.* By J. E. MAYER, Acting Chemical Examiner.

THE analytical results obtained are all from determinations made by Dr. Wyndowe under my own direction and observation, from which I am satisfied of their reliability; they are exhibited in the table annexed. That its value may be understood, it is necessary to explain how little real information as to the strength of brandies is obtainable by the ordinary method of taking the Sp. gr., which exhibits only the gravity of the fluid, with all that it contains in solution; for instance by the ordinary method it is not that which is required that is exhibited, viz., the Sp. gr. of the spirit and water, but the Sp. gr. of the spirit and water, plus the saccharine, coloring, and extractive matters, plus the inorganic matters; that these statements are simple fact, the results obtained show in a very clear manner. Take the first sample analysed, the Sp. gr. of the brandy is ·907, and this is popular-

* To enable those of our readers who are not in the habit of using French weights and measures, to reduce the quantities given in the above paper to the English Standard, we may mention that:—

A cubic centimetre	is equal to about	17	minims.	
A gramme	„	„	„	15½ grs. Avoirdupois.
A kilogramme	„	„	„	35¼ oz. „

ED. *M. Q. J.*

ly believed to indicate certain proportions of water and spirit but little modified by the presence of small quantities of other matters; but that this is a very erroneous mode of viewing the matter is proved by the presence of 46 grains of residue, after evaporation; by the precipitate obtained by Potash—chiefly resinous and oily matters; and finally by the true Sp. gr. ·952, as found when only spirit and water, equal to the original bulk, were tested by the bottle and the Hydrometer.

Now the original Sp. gr. ·907 indicates 55 per cent. of alcohol, but the true Sp. gr. ·952 indicates only 33 per cent.—a very serious difference due to the presence of extraneous matters. Anhydrous alcohol has the Sp. gr. of ·7938 at 60° Fht. and proof spirit ·9198, and it contains 48 per cent. of absolute alcohol. This shews how utterly useless the old methods of determination were, since by those methods the brandy would appear to have a Sp. gr. less than proof spirit, and indeed to show that it was 7 per cent. stronger, all which is not only contrary to fact, but deceptive to the extent of 22 degrees in a hundred, as the true Sp. gr. ·952, found when the sources of error have been eliminated, shows.

The boiling points of brandies are instructive and cannot well be passed over in an examination of this kind, inasmuch as they give, without resorting to Ure's process or more certain but troublesome methods of investigation, a very fair indication as to the presence of other alcohols, especially wood spirit, which has lately, from its cheapness, come much into use and may be employed (if well purified) in adulterating Vinous' alcohol, *i. e.*, within certain limits. These brandies are free from this adulteration, as also from Hydrocyanic acid, which is likely to be present in some American brandies made from peaches. There is in all of them, as the reaction with potash shows, some resinous and oily matters derived probably from the husks, &c., belonging to the fruits or grains from which the spirit was made—all contain saccharine matter in some quantity, with tannogallic acid derived either from the husks of fruits or from the casks in which the spirit was kept.

Chemically speaking No. 5 is the best brandy, but in an article of this kind, a fictitious value is attached to flavour, and by this standard, probably this, that, or the other sample may be considered the best.

Samples 5, 3, 9, and 10, may either of them be selected for Hospital use.

Tabular Statement of the results of the Analysis of the Samples of Brandy.

No. of Sample.	General appearance, taste, flavor, &c., &c.	Result of treatment with Hydrochloric Acid.	Do. Hydrochloric Acid and Sulphuretted Hydrogen.	Do. Solution of Potash.	Do. Solution of Gelatine.	Do. Solution of Sulphate of Iron.	Do. Tests for Hydrocyanic Acid.	Total weight of dry extract obtained from evaporation of ten ounces of brandy.	Per centage of dry extract in each brandy.	Total weight of ash of 10 oz. of brandy.	Per centage of do. do:	Sp. Gr. corrected to temperature of original brandy.	Sp. Gr. corrected to temperature of a solution obtained by distilling 6 ounces—adding to the first 2 ounces that came over 4 ounces distilled water to make up the original quantities.	Boiling point Faht. of each brandy.	Per centage of real Alcohol. (Fownes.)	Remarks.
								Grs.								
3	Clear, color of golden sherry, smell and taste of fair sample of brandy.	Nil.	Nil.	Color much darkened, dark red, flocculent precipitate.	A considerable precipitate.	Gave a dark blue black color.	No characteristic reaction.	46	1·12	4·5	·011	0907	0752	186°	33	Reaction to test paper slightly acid, quality good.
5	Do.	Nil.	Nil.	Color a little darkened, slight precipitate.	Cloudiness.	No color.	Do.	7	·183	1·	·003	0904	0940	188°	39	Do. slightly acid, quality very good.
7	Color of dark sherry, taste and smell less fragrant than preceding.	Developed, a peculiar offensive odour.	Nil.	Color darkened, and after a while red flocculent precipitate.	No effect.	Blueish black color.	Do.	88	2·3	11·	·03	0918	0946	187°	36	Do. slightly acid, pretty fair quality.
9	Color paler than last, taste & smell more fragrant than last, less than preceding.	Do.	Nil.	Do.	Do.	Dark greenish color.	Do.	31	·903	1·5	·004	0921	0954	188°	32	Do. slightly acid, quality fair.
10	Color of golden sherry, taste and smell in point of fragrancy better than last, not so good as 1st two.	Do.	Nil.	Color much darkened, dark red, flocculent precipitate.	Do.	Blue black color.	Do.	26	6·74	3·	·008	0921	0955	188°	32	Do. slightly acid, quality fair.

MADRAS, 8*th June*, 1863.

(Signed) J. MAYER, *Acting Chemical Examiner.*

Art. VII.—*Notes on the Treatment of Delirium Tremens.* By William Hanbury, A.B., Surgeon, 33rd (Duke of Wellington's) Regiment.

Although the merits of opium in the treatment of Delirium Tremens were assumed to have been established by long experience, it was always well known that certain inconveniences some time arise from the use of this drug, and that in many cases it fails to bring the disease to a favorable termination. The increased nervous excitement, subsequent failure of strength, profuse perspiration, sunken features, muttering delirium, and lastly coma, with perhaps a suspicion of narcotism in it here and there, all too clearly demonstrated the injurious effects of opium in certain cases. Untoward consequences of this kind some endeavoured to counteract by exhibiting the remedy in combination with antimony, chloroform, &c., and with more or less success. But the opinion had long been entertained by others that the disease has a course and duration more or less definite. It was observed that a dose of opium which produces no effect in the initiatory stage of the affection, is often followed by profound and refreshing sleep, when given at a later period, and that a patient who remains wakeful, notwithstanding a large quantity of opium may have been taken, will often sleep soundly at the end of 24 or 36 hours after its use has been discontinued. These and other facts which might be mentioned, clearly indicated that the expectant use of opium (assuming it be necessary at all), as opposed to full and repeated doses exhibited from the first appearance of the symptoms, was so far founded on a correct appreciation of the disease, and of late years the treatment of the affection by opium has, for the most part, been modified in accordance with the facts thus established. Experience moreover did not rest at this point; still later the conviction gained ground, that it was not only the nature of the disease to run a certain course, however variable in different cases, but that it had a tendency to cure itself; and thus it has come about that a remedy which enjoyed, on the whole, the confidence of the profession for a long series of years, is now very sparingly used or has been entirely abandoned,—its use being superseded by chloroform, by nutrients in combination with stimulants, and still more recently by digitalis. Nor does the process of elimination seem likely to end

here, for there can be no doubt that the views propounded by Dr. Laycock will ultimately be very generally accepted as the basis of our future practice.

Of the efficiency of chloroform I have no opinion to offer; it is variously spoken of, and we must therefore conclude either that it has not generally answered the expectations formed of it, or that its merits are not yet settled. But regarding the two latter, I wish at this stage of transition in the history of the disease to record a few notes which appear to me to possess some interest.

During the last few years, the cases which have come under my observation have been successfully treated by the use of stimulants (brandy and porter) in limited quantities, and concentrated nourishment during the first two or three days of the affection, followed at the end of that time by the exhibition of opium in anodyne doses at night. The small amount of that medicine, when thus administered, which generally sufficed to induce curative sleep, seemed to suggest that its use could be dispensed with, and that the disease might be left—as far as this medicine was concerned—to the efforts of nature alone, and accordingly an opportunity was taken advantage of to test by experience how far the supposition would prove correct.

An old and very dissipated soldier, who had been previously treated in the way just indicated, suffered from delirium tremens twice subsequently, and on each of these occasions the characteristic symptoms subsided under the use of stimulants and nutritious food, chiefly beef-tea and egg-flip. Somewhat later a serjeant, much addicted to drink, was admitted with dysentery, aggravated if not caused by this Military vice. At the end of two days the symptoms of delirium tremens became developed, and the cure was trusted to nature alone, aided by nutrients and stimulants, and again with a favorable result.

A short time after the occurrence of the last case, I was consulted regarding the condition of a man, of very drunken habits, affected by the disease, and who had taken several large doses of opium prescribed in the usual manner. He was delirious and in imminent danger of sinking. The face was collapsed and bedewed with a cold sweat, the pulse was small, rapid and feeble, and the hands tremulous; and as some cases of cholera were under treatment in the hospital at the time, the impression suggested itself that he had al-

ready reached the collapsed stage of that disease. A little consideration, however, of the attending circumstances of the case, left no room to doubt that the prostration was due to the unfavorable action of the opium exhibited, and I recommended that its further use should be discontinued, and that brandy and porter, with nutritious diet, should be had recourse to. The effect of this change of treatment was very remarkable, and well calculated to make a deep impression. The pulse rallied, the skin became warm, active diaphoresis succeeded to passive serous exudation. A tranquil manner and calm expression of countenance were substituted for nervous tremor and low delirium; and in about 30 hours after the opium was omitted, he fell into a quiet sleep and awoke, cured, at the end of ten hours.

The injurious influence of opium, and the sufficiency of the expectant or non "*therapeutic*" treatment to effect a cure, were well demonstrated in this case, and I have been informed by the gentleman who had first to do with it, that the treatment "without opium," was also successful in two instances which have since come under his notice.

But though examples may thus be adduced to prove that opium can be dispensed with, it may well be supposed, in the absence of more numerous facts bearing upon the subject, that the position of a medical man who adopts an expectant treatment must, for the present, of necessity, be a more or less anxious one.

To stand by and watch for days together for the access of curative sleep, knowing that we have in our hands a remedy capable in most cases, however it may fail in some, of bringing about this desired result with safety and certainty, implies an amount of responsibility which many would wish to avoid; and the able writings of Dr. Laycock on the disease derive not their least value from the confidence which he has secured for this treatment, and which he was I believe the first to recommend and develope on sound physiological principles. The want of this confidence, or reliance on the part of nature, to eliminate the disease without the aid of medicine, notwithstanding the cases above referred to in proof of the fact, so far prevailed with myself, that I hesitated on the account of the alarming and somewhat unusual symptoms to give the plan a fair trial in the treatment of a man who was three times affected by delirium tremens in about six months.

The circumstance has furnished me with an opportunity of noting the effects of Digitalis in the disease, and as these proved most satisfactory the details may be submitted at some length.

The patient, a serjeant of the Regiment, when first admitted presented himself in a very tottering state, the consequence of a long course of dissipation; he was so nervous that he was unable to direct his way into the ward, and, in terror of falling to the ground, clung to another person for support. There was such a tendency to syncope that it became necessary to restrict him to the recumbent position. Stimulants, beef-tea and egg-flip were now prescribed, but though he became less nervous, and his general appearance indicated some improvement, there was no sleep; and as the affection was complicated with fits, which were reported by the Apothecary to be of an epileptic character, I thought it advisable at the end of three days to administer 40 drops of Solution of Morphia as an anodyne at night. For some hours after taking this dose he continued wakeful and excited, but on visiting him next morning his manner was found more tranquil, and about noon of the same day he fell into a sound sleep, and then rapidly recovered. This sleep, however, I am inclined to think was less the result of the opium than of the previous treatment, and of the tendency of nature to effect a cure at that stage or period to which the disease had arrived.

On the second admission I was absent from the Regiment, and he was carried safely through the attack by stimulants, nutritious food, and the use of opium in moderate quantity. When last under treatment, and for the third time, he was not under my own immediate care; but the following is a statement of the case.

Sergeant —— was admitted into hospital on the 7th February 1863, in a very nervous condition with tendency to syncope, the consequence of continued indulgence in drink; and as an attack of delirium tremens was considered imminent, nutrients and stimulants were prescribed, as also Morphia in small quantity to lessen irritability of stomach. During the first two days he continued quiet and rational, but he had no sleep, and at the end of that time mental delusions were noticed and all the symptoms of delirium tremens became fully developed, with fits of horror or fright, which lasted for a short time and then subsided,

leaving him in a state of faintness approaching to syncope. The treatment above indicated was continued for two days longer, an anodyne draught being given at night; but though his general appearance was more satisfactory, he remained sleepless, and now, after 48 hours, it was thought necessary to increase the quantity of opium and to direct one drachm of the tincture be taken at night. On the following morning all the symptoms were found to have assumed a much more serious character. The nervous agitation was excessive, the evidences of failing power were well marked, the pulse was quicker (upwards of 100) and much reduced in volume; there was picking at the bed-clothes and rambling delirium. In the presence of these grave indications opium was at once discontinued, and the use of stimulants and nutrients enjoined; and in the evening the pulse had regained much of its volume and became less frequent, and the delirium was of a much less miniatory character. Still there was no tendency to sleep; and as I now felt anxious about the result, I suggested to the Medical Officer who had charge of the case, the propriety of having recourse to digitalis. Two drachms of the tincture in water were accordingly given at 9½ P. M., and at 1 A. M., next day, four hours and a half later, I visited the hospital to note the effect. There had been no sleep, but the general improvement was well marked in a more calm and tranquil manner, a less frequent pulse, and I left instructions that three drachms more of the tincture were to be given at 3 o'clock. On again seeing the patient at 6½ A. M., three and a half hours after the second dose had been taken, his appearance and state were most satisfactory, and the expression of the countenance was extremely placid and tranquil, the nervous agitation had completely subsided, delirium had vanished, the pulse was of good volume and reduced in frequency; and though there was yet no sleep, he was already so rational that he was quite conscious he had been affected by strange illusions, and laughed at the idea or conceit, as he now recognized the reality of his position. There was no drowsiness to indicate the approach of sleep, but that it was not far distant was obvious from the calm and relaxation which prevaded his whole appearance and the further use of the medicine was discontinued. In less than half an hour he fell into a quiet sleep, and when I again saw him at 1 P. M., the pulse had fallen without any loss of volume from 90 to 74. The sleep, different from that

produced by opium, was light and calm, and when quietly spoken to he awoke, took some nourishment, and attended to the calls of nature; he then slept again for several hours, and at 5 P. M., again awoke quite well in all respects, the pulse having risen on awakening to 92. The urine had been scanty from the first appearance of the disease, but was now voided in full quantity, and the following evening, when tested, it was found to have an acid reaction and a specific gravity of 1·025, while its color was a clear brown, owing probably to the presence of the lithates or lithic acid.

The various and uncertain action of opium in the disease receive useful illustration I think from the history of the three different attacks now referred to.

In the first, we saw that the remedy had no unfavorable effect when given in a single dose after the symptoms had continued three days, though it is by no means certain that the sleep which occurred at the end of fifteen hours, was due to the action of the opium. In the second, the moderate use of the medicine brought the disease, as usually happens, to favorable termition. In the third, it utterly failed.

And in now reviewing the facts, I have no doubt that the injurious influence of opium must be referred to the too early exhibition of the medicine, for we have seen that it was prescribed to allay irritability of stomach two days before symptoms of delirium tremens had appeared at all; and it is by no means certain if its use had been further pressed, that the result might not have proved unfavorable. Again, with regard to the stimulants employed, it seems important to note, and especially for the benefit of those who consider them an essential part of the treatment, that although on the last occasion they were administered from the period of admission, yet the disease showed itself two days subsequently. It would appear indeed that the views of Dr. Pirrie and others, who hold the strange mental aberrations and nervous excitement characteristic of the affection, to be the result of toxæmia affecting chiefly the brain substance, are correct. At first sight, no doubt it might seem that the access of the disease is the direct effect of the withdrawal of the accustomed stimulus, since it so often shows itself in hospitals, as elsewhere, two or three days after a debauch or course of dissipation;

but it must be acknowledged the sequence of events in these instances admits of a different explanation, and resting apparently on physiological grounds. The facts themselves are, moreover, at variance with such a conclusion, for we know that the symptoms often immediately supervene on a state of drunkenness; and Dr. Laycock has shown that the disease may be brought to a successful issue without the use either of opium or stimulants, though the latter would obviously be necessary if the abstinence theory of its etiology were tenable.

On the whole, then, the result of late enquiry and discussion must be assumed to be a more intimate knowledge of the real nature of the disease. There can no longer exist a doubt that the use of opium at an early period of the affection is not only contra-indicated, but that nutrients and rest are more nearly concerned with its successful treatment, than the stimulants with which these remedies have been usually associated. Nor shall we be likely to fall into much error in the event of stimulants being considered necessary in any particular case, if we administer them under the guidance of those general principles which are recognized in the management of other diseases.

Lastly, with respect to digitalis. It will have been noticed that it acted in the case last detailed, to use a common expression, like a charm, though exhibited at a very critical period of the disease; and were this its invariable effect, the treatment of the affection would doubtless be greatly reduced in simplicity, and many anxieties attending it would be removed. But instances of its unfavorable action have been cited, and it still remains to be shown what are the conditions under which it may be had recourse to with least risk of failure.

I believe it has hitherto proved most useful when not exhibited at too early a stage of the disease, and it may probably be found, as with opium, that large doses from the first invasion of the symptoms are less safe and effectual than smaller ones given at a later date, and after some time has been allowed for the natural evolution of the disease. Moreover, if it be true, as Dr. H. Jones suggests, that digitalis exerts a tonic influence on the heart and increases the contractile force of that organ, so far from being inadmissable in the low state of nervous agitation with muttering delirium verging on coma observed in extreme cases, it should

here prove especially applicable. Experience, however, must alone determine this point; but in the meantime, and before resorting to the use of digitalis, it will be considered no more than judicious to adopt means calculated to restore the powers of nature, of a kind somewhat similar to those referred to in the case which has called forth these observations.

ART. VIII.—*On the Sanitary Condition of Ramandroog, and on the Prevalence of Fever at that Sanitarium, in the months of March, April and May,* 1863. By Messieurs DORWARD, BURKITT, GILLESPIE and WEDDERBURN.

(Communicated by the Principal Inspector General, Medical Department.)

DEPUTY INSPECTOR GENERAL'S OFFICE,
BELLARY, 30*th June,* 1863.

To the Deputy Assistant Quarter Master General,
Ceded Districts, Bellary.

SIR,

In reply to your letter, No. 438, dated 22nd ultimo, I have the honor to report, for the information of the Major General Commanding, that fever of an intermittent type has prevailed to a great extent amongst natives who have visited Ramandroog during the past months of March, April, and May; that fever of a malarious remittent character attacked, at the same time, the European officers and their families residing in houses situated at north-west end of the plateau; while the European community in other parts of the Droog, and the soldiers at the Convalescent Depôt, escaped, in a great degree, from fever of any kind.

2. This unusual prevalence of fever is, in my opinion, to be attributed to malaria, especially at the west end of the Droog, where low thick jungle approaches close to the houses, and where the long grass and dead leaves have not been burnt as in former years; other causes, however, besides local, were doubtless in operation, for epidemic fever of a low remittent and fatal form appeared about the same time in nearly all the native villages below, over a large extent of country towards the west, from Humpy to Horpenhully; and the poisoned atmosphere from whatever source below, may have exerted a baneful influence above.

3. Captain Babington, of the Public Works Department, informs me that for a series of years in the month of March, he has personally superintended the burning of grass and decayed vegetation, but that owing to frequent falls of rain at the beginning of the present hot season rendering the grass constantly damp, he failed to burn it in many places.

4. To prevent, as far as possible, the future recurrence of fever on the Droog, strict sanitary measures should be adopted in regard to the burning of dry grass and decaying vegetable matter around the top of the hill, regularly every year in the month of February or March; to cutting down and rooting up all low jungle or brushwood within 100 yards of every house, allowing the larger trees to remain, but lopping off their lower branches to the height of five feet from the ground; to keeping the various compounds scrupulously clean and free from all exuberant and decaying vegetation; and daily to remove all dead vegetable and animal matter from the channels and springs of drinking water.

5. By clearing away underwood, so long as the larger trees are allowed to stand, no danger, in my judgment, need be apprehended of any diminution in the fall of rain or injury to the springs of water.

6. As proprietors or agents of houses cannot be compelled under the present law to keep their compounds clean, I would respectfully suggest that an application be submitted to His Excellency the Commander-in-Chief, that Ramandroog should be made a Military cantonment, and necessary sanitary measures thus enforced.

7. I append an original letter to my address from Assistant Surgeon W. R. W. Burkitt, Medical Officer in charge, and concur with him in opinion that the Droog, so far as convalescent soldiers are concerned, continues to maintain its usefulness as a sanitarium, and also as a valuable retreat for weakly men, during the burning months of April and May.

I have the honor to be, &c.,

(Signed) J. DORWARD,
Depy. Inspr. Genl. of Hospls.,
Ceded Districts.

(A true copy.)
J. DORWARD,
Depy. Inspr. Genl. of Hospls.,
Ceded Districts.

RAMANDROOG, *3rd June*, 1863.

SIR,

In compliance with your desire that I should forward you a brief report and abstract of the epidemic (if I may call it so) of fever that occurred on Ramandroog during the late hot season, I have the honor to state, that the first case amongst the Europeans occurred in one of those houses situate at the extreme north-east end of the station, about the 18th or 20th March. A short time afterwards almost the whole of the residents of another bungalow, in the same vicinity and close to the house in which the first case occurred, were attacked with fever, and a short time afterwards Mrs. Fortey had a very severe attack of the same disease—her residence being also close to the others.

In all the houses mentioned, as well as several others on the Hill, the native servants suffered severely, but most particularly those belonging to the families residing at this (the north-east,) end of the Droog; there was only one fatal case, that of a child belonging to the Commandant's horse-keeper, but many were obliged to leave the station for the low country.

With the Europeans the fever was of the remittent type, of a severe form, and, generally speaking, accompanied with bilious vomiting, irritability of the stomach and hepatic derangement, reducing the patient in an incredibly short space of time to an excessively weak and debilitated state;—the period of convalescence and regaining lost strength being much longer than in any of the fevers I have met with in this country.

The three houses before mentioned are situate at the north-east end of the Cantonment, where the Hill is covered with thick jungle, consisting of low trees and dense brush-wood, the few open spaces being covered with long grass. This jungle, at the time of the first attack of fever, extended close up to and around the houses, excluding a healthy and free current of air; and I have not the slightest doubt, but that the exciting cause of this fever was malaria, originating in the dense jungle surrounding the dwelling houses, particularly as there was not a single case of fever of the same form or type amongst the occupants of any of the other bungalows on Ramandroog, or in the Convalescent Depôt, consisting of over 100 men. Representations as to the necessity, as a sanitary measure, of cutting down and clearing the jungle were made to the authorities, and since

then it has been partially cleared around the houses as well as the grass burned down; but, in my opinion, the clearing ought to be more general and more of the large trees felled. Almost all the people attacked with the fever have suffered relapses, some even as often as four or five times, and at present Mrs. Fortey is only recovering from another severe attack of the disease.

In the Convalescent Depôt, during the months of March, April and May, there were only 17 cases of fever, out of a strength of 201 men; the disease was of the intermittent type, of a mild form, and easily amenable to treatment, the men only requiring a short stay in hospital for recovery; however, as you will perceive by the abstract sent herewith, there has been an increase on the last two years, there being only five cases out of a strength of 196 in 1862, and eight cases out of a strength of 221 in the corresponding three months of 1861.

The health of the Depôt during the three months I have been in Medical charge, has, on the whole, been good: there were two deaths, Private Conroy, of the 74th Highlanders, who died from abscess of the liver,—he had long suffered from hepatic disease, the result of climate and hard living; the other was Private J. Scott, also of the 74th, who died last week from a severe attack of delirium tremens, complicated with acute bronchitis,—he was a man of most intemperate habits which had undermined a naturally good constitution.

The men sent for change of air and to escape the late hot weather in Bellary, have much benefitted by the move, as you no doubt perceived at your late inspection of the Depôt. A large number are now returning to the Head-quarters of the Regiment fit for duty; several men who came up here scarcely able to move about being now quite well. A few men suffering from chronic bowel complaints have not been so fortunate in the change, they have been sent to the low country, as the damp weather is approaching.

I regret to say that the men of the Royal Artillery have not much improved, but they principally suffered from affections and increased action of the heart, for which diseases this climate is not suited.

The weather during the last three months has been fine, although sometimes the heat in the middle of the day has been great and the evenings oppressively close; however, the mornings and nights have been cool and pleasant. There were one or two thunder storms in May, accompanied by a

slight fall of rain. The prevalent wind has been from the north-east.

It is from February till the end of May that the benefit of this station as a sanitarium is felt, when the heat of the sun is intense in the plains, and at Bellary increased by hot winds. When the Hospital of the European Regiment there (as has often been the case) is crowded with fever cases, and frequent deaths occur either from heat apoplexy or the outbreak of an epidemic of cholera, the temperature here is always endurable by day, and cool and pleasant at night.

I have, &c.,
(Signed) W. R. W. BURKITT,
Asst. Surg., 74th Highlanders,
In Medical charge of Depôt.

To the Deputy Inspr. Genl. of Hospitals, Ceded Districts.

(A true Copy.)
J. DORWARD,
Depy. Inspr. Genl. of Hospls.,
Ceded Districts.

	Strength.	*No. from Fever.*	*Temperature.*	*Wind.*
1861, March	55	None.	83°	N. E.
April	83	3	87°	S. W.
May	83	5	82°	S. W.
	221	8		
1862, March	51	None.	84°	N. N. E.
April	72	1	84°	N. E. S. W.
May	73	4	87°	W. & S. W.
	196	5		
1863, March	20	1	80°	N. E.
April	78	9	82°	N. E. & S. W.
May	103	7	84°	N. E., E., S. & S. W.
	201	17		

(Signed) W. R. W. BURKITT,
Asst. Surg., 74th Highlanders.

(A true copy.)
J. DORWARD,
Depy. Inspr. Genl. of Hospls.,
Ceded Districts.

June 1st, 1863.

June 13th, 1863.

My Dear Dr. Dorward,

After several attempts to write something regarding the fever which occurred on the Droog, I find that as I am away from all documents and papers connected with the period in which I was in charge and dependant on my memory alone, it is perfectly impossible for me to send you anything either trustworthy, or on which you could place any reliance.

From some notes in my possession for the year 1861, I find that only 13 cases of fever occurred out of a total of 115 admissions. In the Barracks the cases, in so far as I can recollect, presented nothing unusual, and the only cases at all analogous to the fever of this year, were those of two individuals, viz., Mrs. Babington, who went on a visit to the Coomerswamy range, and returned with fever; she was ill ten or twelve days of a low form of remittent fever. The other case to which I allude, was that of the son of the Rev. A. Walker, the Presbyterian Chaplain, who was living in the house occupied this year by Captain Thackeray. This child was very ill, and at one time it appeared as if he would not have rallied. The case was principally noticeable on account of the severe and persistent nature of the head symptoms. As I recommended Mr. Walker, as soon as he was sufficiently recovered, to remove him to Bellary, I had no opportunity of judging whether if he had remained the fever would have returned.

The only case that I saw of the fever this year, was that of the Rev. Mr. Walker himself who, on his return from the Droog, where he had been on a pastoral visit, had an attack of fever of a low remittent form. It was principally noted for the entire prostration, bodily and mental; the severity in the commencement of the head symptoms; and the very slow progress (when the febrile symptoms had ceased) toward the recovery; but once recovered, there has been since no tendency to a relapse.

From all I can learn, and this is only conjectural, I think the fever was partly owing to the jungle not having been properly burnt—the rain (of which several heavy showers fell) and the heat acting together on it, caused a certain amount of fermentation; and it is well known that, in this country, this alone will occasion fever of a low and malignant form. Another source from which I conjecture that mischief might

likely originate, is the drinking water. This, if you ever observed, is partly made up of the water spilled by the puckallies in filling their bags, and is first filtered through all the bullocks ordure and filth close to the spring. It then trickles down a channel, filled three-fourths of the year with dead leaves, into the tank of the Government garden; from this it permeates through beds of vegetables, in which a large quantity of animal manure is being constantly deposited; and having escaped from this, it runs through a hollow place in which all the dead leaves and refuse of every description belonging to the garden is deposited; and, again trickling through another nullah filled with more dead leaves, it is finally deposited in what, when I saw it last, was a small basin, three parts filled with mud. The water in this course must become largely impregnated with animal matter, and, as a natural deduction, very unhealthy. I believe that the immunity which the soldiers in barracks enjoyed was owing, in a great measure, to their drinking water which came uncontaminated and pure from the rock itself.

Another fruitful source of evil is, I believe, the filthy way in which the private individuals, as a rule, keep their premises, and especially their compounds; this is an evil over which, as the laws are at present constituted, the Military authorities have no control. But as a remedy for this, and the hundred other abuses which I could name, I would suggest that the Droog should be made a Military Cantonment, and the Officer Commanding invested (pro tem) with majesterial authority, with power on the recommendation of the Medical officer of compelling the different people, and the bazaar inhabitants especially, to keep their premises clean. If, after having duly warned them, they refuse to clean them, he should be empowered to have them cleaned himself and recover the expence by some simple process. For however a Englishman may boast of his house being his castle, the possession of this castle gives him (in my opinion) no right to poison the atmosphere all round, and render the vicinity unhabitable except at great risk to his neighbours.

This is the only method I can suggest to remedy the numerous abuses which are becoming from year to year more numerous and more annoying, and which, to my own knowledge, go far to render the Hill much more unpopular than, in my opinion, it deserves.

The Native Magistrate is, I believe, worse than useless.

After all, the origin of the fever might not be so much of a local character as at first sight might be supposed, for the Western Coast and North Canara are, to my own knowledge, suffering from a most aggravated form of intermittent fever, in which a great many cases have proved fatal. Might not the same malarious influence extend to the Droog?

The abuses I have mentioned above ought, at all events, to be corrected. If this were the case and an epidemic did again occur, I make no doubt but it would be of a much milder character and much less universal.

I am sorry I cannot furnish you with any thing like statistics of the cases of fever occurring in former years, but I make no doubt but the Medical officer in charge of the sanitarium has already done this.

Believe me,

Yours very faithfully,

R. GILLESPIE.

RAMANDROOG, 2*nd June*, 1863.

MY DEAR DORWARD,

In reply to your queries of the 29th ultimo—

1. Whether the grass on the Hill has been less burned of late years than formerly? I am not able to discover that there has been any marked decrease in the custom of burning the grass; and, Whose duty it is to see that the grass is regularly burned all round?

It is no body's duty. No orders were ever, that I know, issued on the subject. The Lumbady people burn such part as they like, to obtain fresh grass for their cattle.

2. Whether the native inhabitants here suffered this year more from fever than formerly?

3. And whether any deaths have occurred among them, and from what cause?

Fever was very prevalent last year, and has increased more this year. Of the 10 deaths which occurred, three-fourths were attributed to fever.

4. Whether proprietors of houses on the Droog can be

compelled to keep their compounds clear of jungle and decaying vegetable matter?

The proprietors of the houses are not, generally, residents on the Droog. If the brushwood and dead leaves in their compounds were complained of, and proved to be a nuisance to their neighbours, the nuisance could be stopped, or decided by a jury.

If a tenant of a house thought that the compound should be cleared at the landlord's expense, I suppose he would enter into an agreement on the subject.

5. Whether the natives observe any difference in the season from former ones?

It is said that there has been less rain and more heat; that the old grass retains heat, and when burnt, and springing up green, it keeps the ground cool; that murrain has been very prevalent among the cattle; that fever has not only been prevalent on the Droog, but for 30 or 40 miles beyond, and that it has been more fatal elsewhere than at the Droog. A decrease in the rain-fall is thought by the natives to exercise a bad effect on the spring water. They also think that the spring near Mr. Hathaway's garden, which is generally used by the villagers, has been deteriorated by roots of Pomelows trees spreading into it.

You ask my own opinion.

There was certainly something striking in all the persons in the north-west corner of the Droog getting fever. They may have had a predisposition to it, and there may have been an atmospheric cause, which, I think, is indicated by the widespread character of the disease.

There are times when Hill stations, or parts of them, are unhealthy, irrespective of local conditions. I cannot find that fever was prevalent at that part of the Droog in former years, or that there has been any marked difference in the vegetation.

My first impression was, before the fever broke out, that the brushwood in the ravine at the top of the Nagalapore Ghat, and, round the crest of the hill above the Bellary Ghat, was too thick.

The houses are nearer the jungle, than those further south, where there is a large bare ledge on the top of the hill to the east of the houses. My servants have had less fever than they would have had elsewhere.

I would, as a matter of precaution, have the north-west corner of the Droog cleared of all but a few large trees. I would clear every thing for 50 or 100 yards under the crest of the rock so as to keep a bare belt all round. Although I can scarcely imagine malaria to be the cause of fever on an exposed Hill top, I think there would be no harm in these precautions, and requesting the local officer to see that the whole grass was carefully burnt at an early part of each year, say February at latest.

Yours very sincerely,

A. WEDDERBURN.

PART II.

REVIEWS AND NOTICES OF BOOKS.

The Land of the Permauls, or Cochin, its Past and its Present. By FRANCIS DAY, F.L.S., &c., Civil Surgeon British Cochin, and Medical Officer to the Government of His Highness the Rajah of Cochin. Madras: GANTZ BROTHERS, 1863. 8vo. pp. 577.

THE name of the author of this work is so familiar to many of our readers that they will, no doubt, be glad to welcome it as likely to afford some interesting details regarding a country little known to many whose fortunes are cast even in Southern India. "A kingdom within a kingdom," Cochin has much of interest attaching to it from its importance as one of the great shipping ports of the Western Coast, and it possesses some peculiar features, too, both as regards its History and its Inhabitants.

We are glad to find that Mr. Day has availed himself of his opportunities to compile this most valuable work, in which every topic, likely to prove of interest to the general reader, is carefully discussed. The whole is characterized by method of arrangement and careful verification of all facts stated, and it reflects much credit on the author who gives, in its pages, ample proof of diligent study and careful research. Much that is here written is entirely new to the general reader, and we cordially recommend it as a most valuable addition to any Library.

It does honor to the author and, through him, to the service to which he belongs, and our only regret is that Medical Officers in this country do not more frequently devote time to the study of the History, Customs, Natural and Medical History, &c., of the stations where chance, or good fortune, has granted them a fixed residence for a lengthened period of time.

Mr. Day's work is so far from being purely Medical, that we might content ourselves with a general commendation of it. But there are, interspersed through its pages, several

facts which would find an appropriate place of record in the pages of this Journal.

Space does not permit that we should enter upon the subjects to which many of the chapters are devoted, and we shall only direct attention to those which have a direct importance, as bearing upon matters relevant to our profession. On such points Mr. Day must always be regarded as a high authority, and we may always accept his conclusions as those of a highly informed medical man, and a careful observer of disease. His contributions to the pages of this Journal have been most valuable, and, to a degree, anticipate some of the topics of medical interest to which we shall have to allude.

In the opening chapter, the physical geography of Cochin, and the immediately surrounding country is considered, and we find here a brief abstract of the results of Captain Mitchell's examination of the mud of the Narrikal Bank. He found it to contain, in addition to sand, foraminiferous shells of the genus *Rotalia* and a few fragments of larger shells; Diatomaceæ were found to the extent of more than 20 genera, while Sponges and Corals were detected, though to a very limited extent and in small spicules. Mr. Day adds that, on further enquiry, Captain Mitchell discovered 62 species belonging to 30 genera of the class Cryptogamiæ, and sub-group Diatomaceæ (p. 37).

Chapters II. and III. are so purely historical in their contents that we pass them over, merely remarking that the facts set forth are carefully arranged and convey a very interesting account of the early history of Cochin, down to its surrender to the Dutch on 8th January 1663.

Chapter IV., containing the history of the settlement, contains much of interest and a good deal that is new, and the author has, from papers hitherto unpublished, compiled a very well written account of the subsequent rule of the Dutch down to the period when the English East India Company's troops captured the town. As a contribution to History this chapter is exceedingly interesting and worthy of careful perusal; we direct attention to it as valuable in this point of view, although it does not afford any subject for comment in the pages of a Medical periodical.

The next chapter (V.) opens with an interesting sketch of the origin of British trade to India; and the formation, in 1600, of the *East India Company of London,* and

the gradual establishment of its authority is alluded to. We who have lived to witness the total abolition of its very name in these latter days read, not without some pride which pain subdues, of the gradual extension of the British power as represented by the agents of "The Company."

Passing down in rapid review the leading particulars of the establishment of English supremacy upon the Western Coast, we arrive at that period of this "strange eventful history" of Cochin when, in 1814, it was ceded to the British. This virtually terminated the Military history of the Town, although a nominal occupancy, by a detachment of sepoys, was kept up until 1860. Now, however, even this vestige of the old regime has departed and the Mofussil Police guard the interests of one of the most important cities in Southern India.

Once firmly established in Cochin, the British power flung the wide mantle of its protection over the outcaste and the slave, and after protracted appeals there were, in 1854, no less than 25,000 Government slaves emancipated. It is not, however, alone to this class of the poor that the Indian Government has afforded substantial proofs of its earnest desire for their good. Courts of Justice, an Orphanage and Civil Dispensary now exist for the alleviation of supposed injuries remediable by justice, and for the protection and cure of those struggling with poverty or labouring under disease.

Following the brief notice accorded to these subjects, is a description of *Cochin as it is*, and a perusal of this portion of Mr. Day's work is necessary if we purpose to consider its topography in connection with the diseases witnessed in it and its neighbourhood. "Water is found," in British Cochin, "at a distance of from 6 to 10 feet from the sur-"face, and it is saline, probably from the amount of free "percolation that occurs owing to its proximity to the sea. "The use of it for drinking purposes appears to occasion "that hideous disease known as Elephantiasis, or Elephant "leg" (p. 200). Without questioning the tendency of impure drinking water to produce this disease, we should regard it more as *a cause*, than as *the cause*, of the disease in question. There is, we believe, little doubt that hereditary disposition does in some cases exist, and that indifferent food and insufficient clothing are aids to its development

in constitutions tainted with scrofula and syphilis. Some years since we heard, at a Medical Society at home, a paper read by a learned Professor, who maintained that the periodic fever of this disease, and the swelling and tenderness, with alteration of colour (occasionally observed) which accompanied, or followed, such attacks, pointed it out as a variety of Erysipelas. Without according to this theory any more implicit belief than we can give to the *Saline-water* explanation, we may add that, in Europeans and East Indians of pure and untainted descent, we have seen the disease assume much more the character of Erysipelas than of any other recognized affection of the skin. It is however worthy of note, in support of Mr. Day's explanation of the origin of the disease, that, at Trichoor, Elephantiasis is comparatively infrequent as it "rarely exists so far inland." (p. 19) In a subsequent part of the book the author says (p. 427) "the range in which "Elephantiasis is endemic may be geographically mapped "out, it extends along the coast, but not further than ten "miles inland, decreasing rapidly in severity, as the distance "from the sea becomes greater."

Simple proximity to the sea will not, however, alone, account for the existence of the disease. Our own experience on the Western Coast is sufficient to recall that, at one station on the sea-shore, Elephantiasis is comparatively unknown.

Metastasis of Elephantiasis from the arm to the leg, or *vice versâ*, as mentioned by Mr. Day, would rather favour the theory of a disease essentially cutaneous and not, of necessity, constitutional. That the disease should disappear under the influence of a sea voyage would seem to point to the advisability of employing Iodine in its treatment; but, it as certainly presents some contradiction to the fact that it is most prevalent close to the sea coast where the air, like the water of Cochin, is largely charged with saline particles.

Having considered the condition of water found naturally in Cochin (and which is seldom used by Europeans who supply themselves from the Alwaye river), Mr. Day next adverts to the sanitary condition of the town, or rather to the want of appliances for the preservation of the public health. He directs attention to the faulty construction of houses which enclose a square containing a garden which

is so apt, during the monsoon, to be exceedingly damp. The justice of this objection will be readily admitted by all who have had practical experience of the climate of the Western Coast, where stone walls with a slight cementing of mud are seen, in the monsoon, to present to the eye a bank of unbroken, green, fresh vegetation. Ferns of varied form and size spring up as if by magic and grasses of every shade lend additional beauty to the scene, but beauty, alas! of a fleeting kind, for the first day of bright sunshine without rain dims its brilliancy, and a month of hot weather makes the verdure fade and wither into a brownish coloured hay.

In considering the subject of Christianity in Malabar the Sixth chapter is occupied, but the details of this subject do not require more than this passing notice. In alluding to the infant condition of the Protestant Missionary establishment in Malabar, the author remarks that it can scarcely hope to equal the other Christian sects in success until there is a sufficient supply of Native pastors. He remarks, too, and with justice, that no system of theology can be expected to succeed permanently which does not accept as its chief agency the services of Native ministers—and that, if the presence of resident European clergymen be needed, the religion taught by them will only last while its exponents remain in the country. In the correctness of this, both in theory and practice (of which Mr. Day affords well known historic confirmation), we cordially concur. We would also extend the same remarks to the practice of our own profession. Hence it is that we observe with regret that our Medical College has ceased to send forth Native pupils of the old stamp—men who were calculated to do honor to themselves and their calling, and that in lieu of these we have now a far inferior grade of Native Medical subordinates who have not had the advantage of the liberal education and extended teaching formerly accorded to this class of public servants.

The Hindus, their religion, and various castes are discussed in the Seventh chapter, but these subjects are perhaps sufficiently familiar to our readers to justify our passing them over *sub silentio*, but to any one who is desirous of having placed before him the leading particulars regarding Hindu castes and their origin, no better epitome could be desired than that here afforded.

The Eighth chapter embraces various particulars regarding a race of people of whose origin and actual identity the most varied accounts have been given. The Jews of Cochin have settlements near the town, and in the largest of these, called from its inhabitants *Jews-town*, 419 of this peculiar people reside; about the same number are located at Ernacollum and Chennamungalum: while Half castes and Black Jews are to be found, sparingly, as settlers in Cochin itself.

The term *White Jews*,—distinctively applied to the former portion of the Jewish fraternity,—is not a misnomer as one might be disposed to imagine if he were to recall the dark eyes, ebon hair, and swarthy visage, of the London Jew. Here (as at Damascus—according to Miss Martineau,) the Jew has often light hair, blue eyes and a fair skin. The evident absence of native blood in the present generation of white Jews has led some superficial observers to suppose that they have continued self-supporting as to keeping up their race, and that therefore Europeans could hope to do likewise. Admitting, *argumento gratiâ*, that the Jews are Europeans, which they are not, the conclusion is not supported by known facts. The white Jews have always been obliged to invite the immigration into their community of Jews from other parts of the world, and thus by constant admixture of new blood the ancient people have been maintained. We cannot better draw an inference from this than in the words of the author. "The plains of "India are unsuited for permanent colonization by the "white races if we are to draw conclusions from bygone "facts, or reason by analogy with what is daily perceptible "around."

The history of the Mahommedan faith and some of the religious and social rites and ceremonies of its votaries are detailed in the Ninth chapter, but these do not require detailed notice, and we pass them over being anxious to direct attention more particularly to the subject matter of the latter portion of this interesting volume.

In the Tenth chapter, the author enters upon an examination of the amount of population to be found in the Town and State of Cochin, and notices several of their customs and practices, the greater part of which have a direct, or indirect, influence upon their sanitary condition. He estimates the amount of population, in 1857, in the *Cochin*

State, at 352¾ individuals to every square mile of territory; and in the *Town*, the number of inhabitants is taken at 11,449 according to the Census of 1861. We are not informed as to the means adopted to ensure accuracy in the computation of this Census; but if they were not considerably more reliable than those to which recourse was had in a recent so called Census of Madras, we would be disposed to place very little reliance on the result. However, as the determination of their truthfulness can only be determined by a succession of careful observations at stated periods, we must for the present accept these figures as, at least, approximations to the truth.

The amount of people dwelling on each square mile of the Cochin State is set down by Mr. Day as 352¾, and he remarks upon the fact that this seems to fall short of the rate generally believed in; he, also, accounts for the limited population by alluding to the presence in the territory of uninhabitable forests, water, marshes, jungle, land, &c., all of which, no doubt, limit the actual space available for human habitation.

It may not be uninteresting to compare the figures given with those of the Census of Great Britain; and in doing so we find that the Cochin State would hold a very high position if ranked according to the density of population, as compared with that found to obtain in England 12 years ago.

The averages in the following table comprehend the people in the eleven divisions of England and Wales, as set forth in the Census of 1851, arranged according to the density of population.

	To a Square Mile.	
	Persons.	*Houses.*
In London	19,375	2,509
„ North Western Division (Cheshire and Lancashire	792	139
„ West Midland Division	355	70
„ Yorkshire (nearly the same as all England)	313	63
„ South-Eastern Division	256	47
„ South-Midland Division	247	49
„ South-Western Division	231	43
„ Eastern Division	222	46
„ North-Midland Division	220	45
„ Northern Division	178	30
„ Welsh Division	149	29

From the foregoing it would appear that the native State of Cochin is more populous than England on the average of the whole Island in 1851 ; a result little to be credited until it is placed beyond doubt by such a comparison as we have instituted. If we bear in mind that probably the English Census was as near perfect accuracy as it could be, and that the Cochin Census was very probably *understated*, the comparison is still more interesting.

The inaccuracy of the Cochin Census Reports is admitted ; and the cause of increase in population is indicated in the following observations by Mr. Day (p. 375).

"An examination of the old *Census Returns*, shows a marked increase in the population. That of the *Native State* in 1836 was taken at 288,176, which, in 21 years, would show an increase of 110,880 persons, which is simply impossible, unless accounted for by extensive immigration. The reason of the apparent increase is probably, that many of the lower castes, which may have been formerly omitted, now find a place. But that the population does augment much more rapidly than in olden times, cannot be doubted: the frequent and sanguinary wars, the daily murders, and the annual export of thousands of slaves, are all things of the past, which it is to be hoped will in future be unknown. The tranquil pursuits of peace have superseded those of warfare : and at the present time, there are probably more ploughs than swords, to be found in the Cochin State."

That the enumeration of the lower castes, formerly omitted, may account for the apparent increase to a slight degree is undoubted, and that the prevalence of a long continued *peace* may have somewhat contributed to the same result is equally plain ; but we would feel disposed to attribute much of the apparent increase to natural causes and to immigration into the Cochin State. But if the actual per centage of increase in the 21 years, from 1836 to 1857, and which really amounts to 38·47 per cent., be for these considerations reduced to 30, it will little exceed that observed in England between 1801 and 1811 : and it will fall below that witnessed between 1811 and 1821, when it averaged 1·489 *(quum proxime* 1½) per cent. per annum.

That immigration may increase population rapidly, may perhaps be not unfairly proved by the reverse result upon the country whence emigration occurs. Thus, in Ireland, between the years 1841—51, an actual decrease of population occurred amounting to 1,623,154, and of this no less than 1,289,133 were cases of known emigration. If there-

fore to the original eight millions of the population, in 1841, the ordinary per centage of increase had been added for ten years, the actual deficiency in 1851 would have shown a loss in numbers that could not be accounted for by known mortality. Immigrants are, moreover, usually healthy, and their removal from their Fatherland would itself cause a double loss in its population. But in Cochin the advantages are all in favor of it, for its people seldom emigrate, "they "can rarely be induced to leave it for any length of time, "and should they do so, they pine away, and generally, "before long, die in a foreign land. (p. 378)."

Regarding the Ethnology of Cochin our author says (pp. 375—376.)

"Among such a very varied population, it would be difficult as well as tedious, to give a detailed account of the Ethnology of each separate race, with the manners of each tribe and the language of each people. A general summary of the indigenous Hindu populalation will only therefore be detailed, with whom the Native Christians, Black Jews, and Moplahs, have many general features in common.

"The following figures give the average height and size of limbs in four classes of the people.

Caste.	Age.	Height.	Head.	Neck.	Chest.	Arm.	Thigh.
Nairs.....	26·5	63·9	22·3	14·2	33·4	10·7	18·6
Chogans.....	34·6	64·1	21·4	13·2	32·7	10·1	18·8
Native Christians.....	28·0	62·4	21·6	13·2	31·4	10·1	17·6
Moplahs.....	35·7	63·5	20·4	13·9	32·3	10·4	18·0
Average.....	...	63·4	21·4	13·6	32·4	10·3	18·2
Average on the East Coast*.	...	64·8	20·8	11·9	31·3	8·9	16·1

"It will be seen by the above, that although the natives of the Eastern Coast at Chingleput are taller than those of Cochin, the size of their heads and extremities are considerably smaller. Much of this increased muscularity is probably due to harder work, as this is a seaport town, in which considerable manual labour is required from some castes; while the limbs of the Chogans are, of course, rendered very muscular, by their occupation, which consists mostly in climbing cocoanut trees."

* Vide Dr. Shortt's contribution to this Journal, Vol. IV., p. 103—1862.

We would be glad if our space permitted of our doing more than very briefly noticing the other subjects treated in this chapter. Much is detailed regarding the personal habits of the people of Cochin that is interesting, and some things that explain much of the blind superstition of the people. We believe that nothing will so effectually eradicate these as the gradual progress of Western Civilization, of which one of the great Pioneers is Medical Science.

The native character possesses many excellencies which we are but too prone to overlook; that selfishness is at the bottom of some of their charitable acts, is but too true;—can we acquit our own nation of similar ostentation? But, there is some good at the root of any religion, two of whose most imperious tenets and best known practices are to feed the hungry, and to construct tanks and reservoirs of water. Their hospitality is limited by caste prejudices, but it is not less a merit if done from pure motives. A good deal that is faulty in their character, is due to want of education, and the habits certain to arise from the long continued prejudices of a sensual and bigoted race, who, living in a country where life's ending is often abrupt, come to disregard it—and who only make it subservient to physical enjoyment as a type of a future of illimitable pleasure of the grosser passions.

When, as in the pages of this book, we find whole families of the lower castes, and of humble means, recorded as subsisting upon meat that has died a natural death, upon wild herbs, squirrels, porcupines, lizards, some reptorial birds, mice, frogs, crocodiles, and even tigers, while cats are not unpopular—we can scarcely be surprised if, in other and more serious matters, they are often times misguided and brutal.

The Eleventh Chapter is devoted to the consideration of the Climate and prevalent Diseases of Cochin. As, however, the author has in the first three volumes of this Journal given an admirable Medical Topography of this place, we need only now notice that he has condensed the chief points of information in this regard, in this and the succeeding chapters of his work.

Those who wish a popular summary of these items, will find it here set forward in a concise and readable shape, free from much of the technical phraseology and professional detail that are essential to a strictly Medical work.

The concluding Chapters relate chiefly to Natural History of the animated kingdom. These chapters are carefully and scientifically written, and aptly conclude this very interesting and valuable work.

In bidding our author adieu, we desire to congratulate him very warmly on this result of his labours, and we cordially recommend a perusal of them to our readers.

A Hand-book of Uterine Therapeutics. By EDWARD JOHN TILT, M.D., Member of the Royal College of Physicians; Consulting Physician to the Faringdon General Dispensary, &c., &c. London: JOHN CHURCHILL, 1863—Post 8vo., pp. 309.

WE are no lovers of *specialities* in Medicine. Every branch of our profession requires *special* study; and, in our opinion, he is the most accomplished and deserving medical practitioner, who has so thoroughly availed himself of opportunities of becoming acquainted with the varied phases of disease, that he has no particular predilection for any peculiar line of practice, but is ready and willing to copy with any or all of

"the thousand natural shocks
"That flesh is heir to."

Probably the most natural division of medical practitioners is that which, until comparatively recent times, has held its place with considerable firmness, viz., into Physicians and Surgeons. We say *has held its place*, because we believe that, in these latter days, the pure Physician and the pure Surgeon are fast passing into the things that were; the former is becoming more of Surgeon, and the latter more of Physician every year; and we cannot but think that, before very long, the one faculty system, on behalf of which the late Mr. Wakley wrote so powerfully, will be thoroughly realized.

But at present it cannot be denied that many men do permit a *special* bent to be given to their studies, and thus we find Syphilographers, Dentists, Oculists, Aurists, Obstetricians, to say nothing of those who claim special knowledge of the best means of treating Stricture, Fistula, Hernia, &c.

One of the greatest objections to this is, that it leads sufferers from any affection thus considered to be *special*, to

suppose that there is something peculiar in their cases, which calls for a more extended knowledge and a vaster experience than that which the ordinary general practitioner possesses; and thus a want of confidence in him is induced, not from any overt act or omission on his part, but simply because some one has made such cases his special study, and is supposed to be eminently successful in his treatment of them. Thus long, tedious and expensive journies are often undertaken for the purpose of consulting a specialist; and very frequently on account of simple affections which would readily be treated by the ordinary attendant, who suffers in his reputation from the mere fact of his patients seeking other advice.

We have never yet met with, or heard of, a specialist who declined to treat any case of disease which has come before him, alledging as a reason that he devoted himself peculiarly to his speciality, for so much had his attention been given to it, that he had had no opportunity of efficiently studying other forms of disease; but, of course, such persons may exist unknown to us.

We believe that the members of the profession are themselves somewhat to blame for the continuance of the belief in special diseases. For how frequently is it the case that they recommend their patients, when suffering under any affection classed as special, to seek other advice saying:—"Oh! yours is a peculiar case, Dr. —— has *specially* studied such affections, and I advice your putting yourself under his care."

There can be no doubt that, of late years, a very great advance has been made in Medicine and Surgery; and new modes of diagnosis and treatment have attracted the attention of some practitioners, who have assiduously carried out investigations into their utility, and have thus thrown great light upon the pathology and cure of affections, formerly acknowledged to be most obscure. In Laennec's time the use of the stethoscope was a speciality; subsequently the use of various specula,—vaginæ, auris, ani,—was confined to a few; and more recently the ophthalmoscope, laryngoscope, &c., are equally hidden things to the many. In European countries, intersected by railways and with ample means of speedily reaching the capital, or other, cities in which these "better informed" practitioners dwell, there can be but little objection to this division of labour. But in India it is differ-

ent, and what we wish to be achieved is that every medical practitioner should so carefully study every branch of the profession that he may feel a full confidence of being able to cope, as successfully as the so-called specialists, with any case that is presented to him. Let the knowledge be gained and the confidence felt, the experience will soon follow.

In the veritable history of Brown, Jones and Robinson, we find that the boy Brown was flogged for going into the water, being unable to swim, and the boy Jones was also flogged, because he went into the water when he could only swim a little; and the subsequent career of these worthies has been admirably traced by Douglas Jerrold, in his "Cakes and Ale," so as to show the influence of these early impressions. But such classical tales should have no effect upon the young Medical man. Because he meets for the first time with a particular case,—for instance, one requiring an operation he has never previously performed or seen performed,—that is no reason why he should shirk the responsibility of its treatment, and decline to go into the water, because he has not learned to swim! We fear, however, that this kind of feeling has led many a man to transfer his cases to others, who *should not* be any better able, than he himself is, to treat them.

The subject of the Diseases peculiar to Women has long possessed a peculiar attraction for certain practitioners, and, hence, many years since there sprang up a class of Physicians popularly known as Ladies' Doctors; and we are quite willing to acknowledge that to many of them we are highly indebted for the very great advance which has been made in our knowledge of these diseases. But wherever Medical men seek a home, there they must meet with women,—for no colony of misogynists has as yet been founded,—and wherever women are found there are human creatures possessing pelvic organs, subject to periodical excitement and various physiological processes which, though perfectly compatable with health, very often lead to, or eventuate in, both constitutional and local disease; and, therefore, it appears to us that every medical practitioner should be a Ladies' Doctor, in the full sense of the term.

Dr. Tilt is one of these Ladies' Doctors, or Obstetric Physicians, and he has worthily laboured in the field which he has chosen, and has undoubtedly contributed, by his published

works, to the spread of the knowledge of uterine and ovarian disease.

At the head of this article may be found the title of Dr. Tilt's more recent work. When we first took it into our hands, its size, its neat appearance, and its deep red cover, led us to suppose that we had been presented with a drawing-room manual. And we had some previous notion that such would be the character of the work, from observing that the headings of the chapters were appended to the advertisement of the book; three of these headings being, Treatment of Sterility, Prevention of Uterine Affections, India and Uterine Affections. But after a careful perusal, from preface to end, we come to the conclusion that we were mistaken, and that the book is honestly intended solely for the enlightenment of the profession.

We do not know whether it is the nature of the subject that causes some of the professed devotees of Obstetricy to assume somewhat of an old-womanish character, but certain it is that there are treatises on uterine complaints which possess this character, and we cannot say that Dr. Tilt's little book is quite free from it. It opens with an introductory chapter, the object of which is to teach the young practitioner how to succeed in the management of "Female Complaints." And we fear that those of our young readers who are as thorough haters of humbug as we are, would at once decline to enter upon a field of practice, the qualifications for which are, according to Dr. Tilt,—

"He need not be handsome, but must not be ugly, and a forlorn dismal countenance is more suitable to an undertaker. He may have many good qualities, but unless he combine firmness with gentleness, he will not get on. If rough, he will frighten his patient; if weak-minded, she will despise him. He must be married, or what right has he to know any thing about women! He can allow himself no eccentricities in dress or manner; for in the estimation of women no amount of genuis will excuse the eccentricities of an Abernethy. His behaviour to his patients should be quiet and expressive of kind sympathy, which will not be the less acceptable from being tinged with seriousness. Melancholy looks make a patient feel worse; a cheerful face is a good tonic; but one must laugh little *with* patients, and not at all *at* them, and however ridiculous their fancies may be, they must be reasoned, not laughed, out of them. He should not only be quiet in manner, but also in voice, which should never be loud and boisterous. He should be cool and collected, even when he has only ten minutes to give a patient; it is

an additional reason to be quiet and collected, for a hurried speech and manner would flurry her, make her forget what she most wished to ask, and render her dissatisfied with the visit. * * *

"Few know the importance of a first visit,—how women suffering from uterine complaints have thought it over, what consultations have been held about it with friends and relations, and how many months or years it has taken to bring about this first interview, so important to both parties, as it will decide whether the patient can have confidence in the doctor. How is confidence to be inspired? An eminent Consulting Surgeon, now making a large fortune, assures me that a solemn oracular manner, and monosyllabic answers, makes most impression on his patients. Much as I value his friendship, I differ from his opinion; I believe that a minute and logical investigation of the facts of the case is the safest plan, and that the best way of convincing a patient that one is master of the case, is to take the trouble of explaining it to herself, so that she may leave the consulting-room convinced that her complaint has been better understood than heretofore, and by one who is anxious to cure her; which places her in the best frame of mind to derive the greatest amount of benefit from his treatment. Another method of inspiring confidence is to be hopeful. * * * *

"The art of interrogating female patients, so as to derive the greatest amount of information without in any way hurting their feelings or losing their confidence, is no easy matter. In the first place, as a general always puts the sun in the face of an enemy, so should the practitioner always let the light fall upon the face of his patient. * * * Having succeeded in giving her confidence he should listen with eyes bent down, or seemingly bent down by reflection, to all she may say, urging her on at intervals until the close of her story, for it is well worth the trouble of listening if even only one grain of corn can be extracted from much chaff."

From all this we glean that a "Ladies' Doctor" must be as artificial a personage as it is possible to meet with. Had we a son ambitious to become one of the fraternity, our advice to him would be:—have confidence in yourself; be kind to all your patients, of whatever rank or degree; and, above all, be natural.

But probably some of our readers whose aim is to make a purse, not having any assurance of Dr. Tilt's success in this particular, may feel disinclined to accept his advice, and prefer to assume the "solemn oracular manner, and monosyllabic answers," which make such a profound impression on the patients of the "eminent Consulting Surgeon, now making a large fortune," whose friendship Dr. Tilt so highly values.

Our author divides his book into thirteen chapters, and adds a formulary. The first chapter is on *Uterine Diætetics. (sic.)* Generally speaking we agree with Dr. Tilt upon this subject, but we do not share in his objection to large enemata. He thinks half a pint of water sufficient, and has seen great mischief result from soap and water, particularly when given in large quantities. We cannot agree with this. When one remembers the great tendency there is in all cases of uterine affection to an accumulation of scybala, and that these are commonly retained in the colon itself,—especially about and above its sigmoid flexure,—one cannot suppose that even the reflex expulsive efforts which a small enema will excite will be sufficient to dislodge them, whilst one knows by experience that a large enema of soap and water will cause their expulsion, *cito, tute et jucunde.* Again, we do not think that it is necessary for a patient to remain in the bath for two, three or four hours, in order to derive the full benefit of the remedy. Nor de we exactly understand Dr. Tilt's pathology when he says, "in some hidden way the warm "bath is a positive absorbent of nervous irritability." The chapter concludes with these sentences :—

"When I am consulted by those who have suffered severely from this complaint (uterine disease), I conclude by advising them not to go out visiting, and to have no staying company, for if they do so, they are obliged to exert themselves more than they ought, and to neglect some of the details of treatment. When disease has lasted for years, it is hard work to get well, and those who will not take that trouble, have no right to complain if they do not recover."

We never give such advice, for we believe the silent and solitary system most inimical to patients suffering from uterine disease. We caution them against over exertion, enjoin strict attention to our instructions, and advise "staying company" in the shape of an agreeable friend, whose society will engage their attention and prevent them brooding over their complaints. If Dr. Tilt practised in India, we think he would soon learn to appreciate the value of a companion for his patients.

The second chapter is headed *Antiphlogistic Treatment.* Dr. Tilt is a decided advocate for this line of treatment, and devotes full consideration to the subject of bleeding. His remarks upon the application of leeches and the counter-indications for their use, are cautious and judicious.

The third chapter treats of *Sedatives,* and, here, amidst

much that is really useful, there is a great deal with which we can in no wise agree. For instance, Dr. Tilt recommends two or three grains of acetate of morphia to be given in confirmed hysteria, and the dose to be continued until the remedy begins to tell on the disease. In one part of his book Dr. Tilt tells us that he has never practised in India, but we should have thought that he had, and that the course of treatment we are about to allude to had been derived from native female practice.

"In severe headache, megrim, and hemicrania, which so often occur in connexion with diseased menstruation and uterine affections, it is good to sponge the head once or twice a day with cold vinegar and water, and after half drying the hair, to rub in, for five minutes, sweet oil or any pomatum the patient may prefer. If these refrigerant measures do not relieve, hot flannels, sponges, and hot irons to the temporal regions, can be tried with due caution. When the symptoms indicate a tendency to insanity, I have the head sponged with water, holding in solution 2 to 4 oz. of camphorated spirit of wine to the pint, with the addition of a little Eau-de-Cologne or lavender water. * * * In pseudo-narcotism, amounting to stupor, I have, in addition to other means, rubbed into the scalp Eau-de-Cologne with as much camphor as it would dissolve. After rubbing it in for a few minutes, the patient has come to herself. In a case in which these attacks of stupor frequently followed the epigastric pain, this was my only treatment during the attack. On recovering her senses, the patient felt as if her brain were 'benumbed,' and then succeeded a sensation of internal pricking, like 'pins and needles.' When this was complained of, I wrapped the head in a turban of flannel, and left the patient to herself."

Speaking of nymphomania "in unmarried women with strong passions," the subjects of severe ovario-uterine inflammation, and of the spontaneous orgasm of the reproductive organs, which "perfectly pure-minded widows" sometimes experience, our author says :—

"I have known this distressing mental state, and the sexual orgasm which caused it, to be cured by the occasional use of matrimony."

It was the perusal of page 68, where this subject is treated, that convinced us that Dr. Tilt's book is intended solely for the professional eye, but we do not think that Dr. Tilt pays any compliment to his readers by employing such a loose expression as "the occasional use of matrimony."

Further on, he adds :—

"Powdering the sheets with camphor, its internal exhibition, as well as that of lupulin, is to be tried."

After this, the reader will not be surprised at hearing that:—

"If coarsely powdered and folded in cotton wool, it (camphor) may be worn as a sachet at the pit of the stomach."

In Chapter II., Part VI, of a book, of which we are very fond, entitled *The Caxtons; a Family Picture, by Sir E. Bulwer Lytton,* we read as follows:—

"'My friends,' said my father, looking up from his book, and addressing himself to his two visitors, 'I know of one thing, milder than calamity, that would do you both a great deal of good.'

"'What is that?' asked Sir Sedley.'

"'A safron-bag, worn at the pit of the stomach!'

"'Austin, my dear!' said my mother reprovingly.

"My father did not heed the interruption, but continued gravely, —'Nothing is better for the spirits! Roland is in no want of saffron, because he is a warrior; and the desire of fighting, and the hope of victory, infuse such a heat into the spirits as is profitable for long life, and keeps up the system.'

"'Tut,' said Trevanion.

"'But gentlemen in your predicament must have recourse to artificial means. Nitre in broth, for instance—about three grains to ten—(cattle fed upon nitre grow fat); or earthy odours—such as as exist in cucumbers and cabbage. A certain great lord had a clod of fresh earth, laid in a napkin, put under his nose every morning after sleep. Light anointing of the head with oil, mixed with roses and salt, is not bad; but, upon the whole, I prescribe the saffron bag at the' ——

"'Sisty, my dear, will you look for my scissors?' said my mother.

"'What nonsense are you talking! Question, question!' cried Mr. Trevanion.

"'Nonsense!' exclaimed my father, opening his eyes; 'I am giving you the advice of Lord Bacon. You want conviction—conviction comes from passion—passion from the spirits—spirits from a saffron bag. You, Beaudesert, on the other hand, want to keep youth. He keeps youth longest who lives longest. Nothing more conduces to longevity than a saffron bag, provided always it is worn at the' ——

"'Sisty, my thimble!' said my mother.

"'You laugh at us justly,' said Beaudesert, smiling, 'and the same remedy, I dare say, would cure us both!'

"'Yes,' said my father, 'there is no doubt of that. In the pit of the stomach is that great central web of nerves called the ganglions; thence they affect the head and the heart. Mr. Squills proved that to us, Sisty.'

"'Yes,' said I, 'but I never heard Mr. Squills talk of a saffron bag.'

"'Oh, foolish boy! it is not the saffron bag—it is the belief in the saffron bag. Apply BELIEF to the centre of the nerves, and all will go well,' said my father."

Having refreshed ourselves with the perusal of this chapter, we turned over Dr. Tilt's leaves until we came to a section headed *Saffron;* and we find that our author does not share in good Austin Caxton's faith in the efficacy of this drug, for he says, "it has been too much praised." However, we congratulate Dr. Tilt upon his patients being able to apply BELIEF to the centre of their nerves; but we fear that a camphor sachet to the pit of the stomach would not relieve our patients, for they would inevitably detect from our countenance, should we ever prescribe it, that, so far as we were concerned, no BELIEF accompanied it.

The fourth chapter treats of *Caustics,* and it contains some very useful suggestions and many admirable cautions as to the employment of these agents. We entirely agree with the author as to the value of a solution of iodine in some of the minor uterine affections. He says, and his experience is similar to our own:—

"As an application to ulcerated surfaces, it cannot compete with Nitrate of Silver, but it better suits some idiosyncrasies and pseudo-membranous ulceration."

Dr. Tilt has a predilection in favor of potassa fusa cum calce, as the best of the stronger applications to the uterine neck. He is somewhat severe upon those who largely employ the caustic potash itself, and we regret that he considered it necessary to pen such illiberal sentences as the following:—

"If even potassa fusa cum calce occasionally produces the serious accidents which I have just enumerated, who can believe it possible that inexperienced practitioners can apply an inch of potassa caustica to the neck of the womb, without sometimes causing more formidable accidents? Although this practice has been followed by the numerous pupils formed by Professor Simpson during the last thirteen years, still very few untoward accidents have been brought to the knowledge of the Profession. On this side of the Tweed, the Surgical misfortunes of Medical men are brought to light by the journals, by Medical Societies, and by Coroner's inquests; but Surgical failures are unheard of on the Scottish side. It would seem as if, in that happy land, heroic remedies were harmless, Surgeons infallible, and women made of cast iron, were it not that occasionally

there came from across the border the details of cases which go far to prove that human nature is every where alike."

Now we hold that potassæ hydras is one of the most manageable of caustics, and that if judiciously applied, the user can limit its effects to just the degree he wishes. We do not hesitate to make use of it, even to the neck of the womb, when it appears to us to be the most appropriate remedy for the case under treatment. That its application is not frequently called for, we are convinced, but a seldom occurring necessity is no argument against the use of a potent remedy. Perhaps it is as well to add that we have never been north of the Tweed, and have never seen nor studied under Dr. Simpson; but at the same time we never hesitate confidently to pursue courses of treatment sanctioned by his deservedly high authority.

The fifth chapter is on *Tonics*, and though not very full, there are some useful suggestions with reference to change of air, the use of cold and other baths, &c. Again we find what we cannot but consider an illiberal remark.

"As Dr. Willemin practises at Vichy, he of course is convinced that it is better than any other watering place for these complaints; but with admirable candour, in his introduction, he quotes the opinions of some twenty-four hydrologists of France and Germany, where each maintains that his particular spring is the most efficacious for the same complaint."

The author concludes this section of his work by stating that:—

"Success is another tonic of potent energy, for the wounded conqueror escapes the typhus which decimates the vanquished. Professional men, of strong constitution, try London for a few years, and retire with shattered health, ruined not by the smoke, nor by the fogs, but by the depression which, like Prometheus' vulture, gnaws at their vitals day by day till it can be stood no larger. On the other hand, success has enabled many a weakly frame, if tempered with moderate prudence, to live on for years in the midst of vast labour. For women, success is marriage; and as our social state prevents the marriage of thousands of healthy, blooming women, it follows that, while they perform their part in the routine of daily duties, the canker, disappointment, often gnaws their vitals, and saps their strength in the inner-most machinery of the nervous system. In marriage, considered as a tonic, we must take into account this mental satisfaction of success, the emotional stimulus of affection given and returned, the physiological stimulus of matrimonial intercourse on the whole frame, and the complete change

of circumstances in which the bride is placed. An enlarged field of observation convinces me that the profession has not in any wise exaggerated the influence of marriage on women, and that its dangers are infinitesimal as compared with those of celibacy."

The subjects of *Hæmostatics, Emmenagogues,* and *Specific Treatment,* occupy the next three chapters; and in Chapter IX, *Uterine Orthopædics* are treated of. We regret again to find some ill-natured remarks.

"Practitioners entertained the singular notion that they could permanently restore the womb to its right position if they replaced it by means of the uterine sound every day for two or three months. The absurdity of this plan led Professor Simpson to devise his intra-uterine pessary, which he advocated with the same enthusiastic spirit, that made him take up chloroform for midwifery, tallow for consumption, numismatics, or revivals. No contagion is so catching as enthusiasm, and the new panacea was extensively tried both at home and abroad. Unfortunately it caused the death of women, if not in Scotland, at least in England and in France."

We cannot consider such passages as these—the offspring of envy, hatred, and malice, and all uncharitableness,—otherwise than blots upon Dr. Tilt's pages. Nevertheless, this chapter is one of the best in the book, though we now and then meet with notices of a line of practice which no one could induce us to follow. Speaking of the utility of abdominal pressure by bandages, he says, "I have known "Récamier cut short a violent hysterical attack by making "a lady's maid sit on her mistress' belly."

The reader will notice the doubt in which we are left as to whether it was the lady's maid, or the mistress, who was the subject of the hysterical attack so happily cured.

Dr. Tilt gives good advice upon the subject of pessaries, recommending, generally, the globular air pessary. We think it a capital instrument, but were certainly not prepared to hear that its therapeutic properties were so very great. We read (p. 200):—

"An hysterical unmarried woman became amaurotic on sitting up, and after many other means had been tried, Debout applied an air-pessary, which effected a cure."

The remaining chapters are devoted to the consideration of the *Treatment of Uterine Complications, Treatment of Sterility, Prevention of Uterine Inflammation,* and *The*

Influence of India on the Treatment of Uterine Inflammation. We have already devoted so much space to this little book that we must hasten to close our notice of it. Those who might expect to derive much information from the last chapter, the subject of which must be interesting to those practising in the tropics, will be surprised to find that it occupies but seventeen pages. The following questions are considered: 1. Why do tropical climates increase the frequency of uterine inflammation amongst those born in temperate regions? 2. What is the influence of tropical climates on the march and progress of uterine inflammation, both before and after the patient's return to a temperate region? 3. Does the treatment of uterine inflammation require to be modified, by the peculiar morbid conditions of those who return from a tropical to a temperate climate?

The first question is thus answered. Habitually intense heat disturbs menstruation in those who were not born under tropical influences. Indian pathology is essentially abdominal; diarrhœa and chronic dysentery are frequently met with as causes, concomitant or sequential, of uterine disease in Eastern localities. Dr. Stewart, at the native hospital in Calcutta, has repeatedly demonstrated to his pupils, by means of the speculum, that cases admitted as dysentery were due to extensive ulceration of the neck of the womb reacting on the rectum! The deteriorated state of the blood to be seen in variable shades of anæmia; the deep-rooted debility caused partly by the physical effects of habitually intense heat, sometimes by malaria, and always by comparative muscular inactivity, want of sound sleep, and by change of habits imparting a certain amount of oriental indolence to the once hardy English woman; and lastly, a large portion of disease in tropical countries is referable to cold.

Lest the reader should question the soundness of the statement that uterine inflammation is more frequent in tropical than in temperate climates, Dr. Stewart of Calcutta is quoted, who "does not hesitate to say that, in India, eight "out of ten of the European female residents, are habitually "subject to deranged menstruation, leucorrhœa, or to cervi-"cal excoriations."

We do not quite understand what Dr. Tilt means by a "sequential cause;" and as to diarrhœa and chronic dysentery being frequent causes of uterine disease, in order to

render the argument logical, it should be shown that these affections are infinitely more frequent in the European female than they are in the European male resident in the Tropics—a point which we are by no means inclined to accede to Dr. Tilt.

The second question is thus replied to :—Both acute and chronic inflammation of the womb tell more forcibly on European women in a hot climate than in their native country. The discharges are more profuse ; the nervous symptoms more severe and eccentric ; debility and prostration of nerve-force are more intense and felt at an earlier period. And as the causes, enumerated before, are still in action, the progress of the complaint will be accelerated. "If, as frequently occurs, uterine disease remain undetected "or without adequate treatment, it is thus more likely to "become worse in a given time, than if the same patient had "remained without treatment in a temperate climate." Patients return home, recruited in health, perhaps, by the voyage, but this does not always tell favourably on the uterine disease, which is sometimes aggravated by the return to a colder climate. After the return home, treatment is liable to be interfered with by the remains of partially subdued tropical complaints, such as ague, remittent fever, liver derangement, and chronic dysentery.

The third question naturally divides itself into two parts. Treatment in the Tropics, and after return to Europe. Hygienic rules for the observance of young women arriving in India, are given. They should keep quiet, seek to re-establish the regularity of the menstrual flow, and not marry until this be accomplished. They should keep up European habits of activity so far as consistent with health. It is for those who practice in hot climates to decide how exercise under solar influence is or is not prejudicial to European women. Dr. R. Jackson says that, in the East and West Indies, troops were never so healthy as when actively engaged under solar influence, and never so sickly as when reposing in barracks. "For myself, I never "felt stronger than during the ten days spent in crossing "the Desert from Gaza to Cairo, at the end of May, being "in saddle all day, and the thermometer ranging from 100° "to 120° Faht." The cold bath, and the daily use of large, cold water, vaginal injections, are good prophylactics. When uterine disease has occurred, Dr. D. Stewart of Calcutta,

Dr. Scott, late of Madras, and many other practitioners, fully adopt the principles of treatment laid down in the writings of Dr. H. Bennet and the author; constitutional remedies, like quinine and steel, are less useful in India than in England, and local or surgical measures are absolutely required, and frequently fail.

Upon the return to Europe, surgical treatment must be at once resorted to, for the constitution is more liable to suffer from the continuance of an irritable sore, than by the application of nitrate of silver, or a more energetic caustic. Under all circumstances, the treatment will be protracted. A well-adapted succession of tonics, sea bathing, travelling, and "hydropathic appliances," will often render great service.

We cannot but admire the evident sincerity of the author of this little work. It is simply what it pretends to be "A Hand-book of Uterine Therapeutics," and we make no doubt that many members of our profession will thank Dr. Tilt for furnishing them with so well arranged a collection of therapeutical resources. There is certainly a large amount of useful information to be found in the book.

We have chosen to point out some remarks to which we take objection, and it will be readily understood that there are many observations in the condensed epitome we have given of the author's views concerning uterine disease in India with which we cannot agree.

Did space permit we could show several remarkable inconsistencies, and illogical conclusions in the book, but we must pass them over. We notice, what appear to us, two great defects; first, no proper distinction is drawn between the structural and the functional classes of uterine affections; and the term "inflammation" is used very constantly as applicable to cases which cannot be considered to have any thing of an inflammatory nature about them. To avoid misunderstanding, Dr. Tilt would have done better to have distinctly defined what he means by the term "inflammatory affections."

The second defect, for such it appears to us, is an exaggeration of the utility of Surgical treatment, and an apparent want of appreciation of the full benefits to be derived from constitutional and hygienic treatment.

But, upon the whole, we recommend the book to the consideration of those who wish to have ready at hand, in a condensed form, a fair account of all the *armamentaria* which may be arrayed and brought into play, for the relief or cure of some of the most distressing affections which, in their very nature, depress and render unhappy those who demand our warmest sympathy and our highest respect, as

"the most faultless of created things."

The Stethoscope. A Quarterly Review of the Modern Practice in Consumption and Chest Diseases. London: J. W. DAVIES, 1863. Small 8vo. Nos. II. and III., pp. 66—60.

The Canada Lancet. Edited by W. E. BOWMAN, M.D. Published Monthly. Montreal, 1863. Large 8vo. Nos. 2 and 3, pp. 8 each.

THE objections which are legitimately urged against specialities in medicine and special hospitals, no longer have any weight when we come to consider Medical Literature; for it stands to reason that every disease or class of diseases may, with advantage, claim its own exponent. But although this is true as regards standard works and monographs, it scarcely holds with reference to journalistic literature. We cannot but look upon a serial devoted to the consideration of solely one branch of medicine as having a tendency to keep up specialities, and as being therefore of an objectionable nature.

Although a tolerably wide field is embraced in the term "*Consumption and Chest Diseases*," it cannot be said to be an inexhaustible one; so that it follows that a journal devoted to this subject must eventually either fail for want of original matter, or become a mere case book, or, departing from its proper sphere and trenching upon other ground, it must cease to be what it professes to be. Further, it cannot be denied, that, however high the character of the conductors of a special journal may be, the uninitiated will not fail to associate with it the idea of a *puff*.

Of course it would be quite out of place for us to attempt to make any critical analysis of the contents of the two

numbers before us. We content ourselves with simply mentioning the titles of the articles they contain. These are:—On Mercury in Phthisis; on some Theories of Tubercle; on Dr. Richardson's Description of Subclavian Bruit; on the Physiology of Constricted Respiration in Incipient Consumption; Preventive Medicine; the Case Book; on the Nature of the Early or Impending Stage of Phthisis Pulmonalis; the Early Stage of Phthisis Pulmonalis, as indicated by its Diagnostic Signs and Symptoms; on Indications of Treatment; and on the Influence exerted by some Articles of Dress on the Female Constitution.

So far as we have perused these articles, we are bound to admit that there is a great deal of useful and reliable information to be derived from them. But we conceive that the essay, the title of which concludes our list, is a sign of the trenching upon other ground to which we have alluded, and it may be that it is but "the beginning of the end."

The *Stethoscope* is very neatly "got up," and printed in a good bold type, and in this respect reflects credit upon its publisher.

The subscription is eight shillings per annum, free by post, if paid in advance.

The Canada Lancet is a general medical periodical, and it is certainly the smallest monthly journal which we have ever seen. But small beginnings often lead to greater things, and we trust that Dr. W. E. Bowman, the editor of this Colonial Medical Serial, will meet with such an amount of support as will induce him gradually to augment the number of his pages.

Probably there never was such a rage for periodical literature as there is just now. The recent changes in the tariff, as regards the paper duties, will not alone account for the great increase in the number of journals; there must have been an increased want, or the supply would scarcely have been made. It is true that supply sometimes creates demand, but, as a general rule, the converse is the fact. We know that there have been, lately, numerous ephemeral publications which have disappeared as soon almost as they had seen the light; but, on the other hand, there has been, not only in general but also in scientific literature, a very great increase in the number of periodical publications, which have gained a hold upon the public mind and show

no symptoms of decay. We trust that, so far as their aim is good, and their contents of interest and value, they will enjoy a perennial vigour.

We presume that the wants of the Medical Profession in Great Britain, are so well met by the existing journals, that it is scarcely likely we shall have any addition to them. But why should not every Colony have its own journal? That Canada as a country, or Montreal as a city, has a good claim to possess a Medical organ of its own, cannot be denied; for we read on page 12 of the publication under notice that:—

"The number of Medical men in the city of Montreal is seventy-six, not including the twenty Army Surgeons. In Toronto, sixty-three; in Ottawa city, twenty; and in Kingston, nineteen."

This augurs well for the success of Dr. Bowman's venture.

In the infancy of a journal, the great bulk of the work naturally falls upon the Editor, and our country cousin is not exempt from this. But as the days pass on, contributors come to the front, and we trust it will be thus with Dr. Bowman, and that his labours will be lightened, and though not restricted to, yet more particularly engaged upon, the simply editorial department.

To give our readers an idea of the scope of what the Editor calls his "lilliputian Lancet," we will mention the contents of the number before us. They are as follows:— On Large Doses of Digitalis, by W. E. Bowman, M.D.; Some News items; A short Editorial, Judge Hare's decision how far physicians are liable for accidents occurring during, or caused by, the administration of Choloroform; New York Ophthalmic School; Queen's College, Kingston, Granting of Degrees; Victoria College, Toronto, ditto; Review of Meryon's History of Medicine, Vol. I.; Chancres, a Synopsis of the results of all recent investigations on the subject, from Bumpstead and other authors, by W. E. Bowman, M.D.; Strychnia as a Poison, by T. D. Mitchell, M.D., Professor of Materia Medica at Philadelphia; Glycerine locally in Fevers; Medicated Cigarettes, by W. E. Bowman, M.D.; On the arrest of the Secretion of Milk, by ditto; An Editorial on Ovariotomy; Botanic Garden; Two successful Cases of Ovariotomy; Convocation of McGill College; Cold Applications versus Ergot, by W. Monagan, M.D.; Cancer of the Œsophagus, by G. S. DeBonald, M.D.; Chancres, concluded. Then we have To Correspondents, Lists of Medical Works and Periodicals, &c., &c.

The following, taken from the Chicago Medical Journal, deserves notice here:—

"*Glycerine locally in Fevers.*—John E. Ennis, M.D., of Lyons, Iowa, after an experience of two years in the army, recommends glycerine highly as a soothing application to the parched lips, tongue and fauces of continued fever, being pleasant to the taste, and forming an excellent substitute for the natural secretion of these organs until their glands shall have resumed their functions."

From the Notices to Correspondents, we take the following:—

"*Perry Davis's Pain-Killer.*—Gum. Guaiac ℥ii; Oil Spruce ℥i; Cayenne Pepper ℥ss; Tr. Opium ℥ss; Gum Camphor ℥i; Spirits Ammonia ℥i; Alcohol O ii."

We have copied this formula, as, from our own knowledge, the "Pain-Killer" is a very popular domestic remedy in this city. We do not see much objection to it, for, if the above quantities are correctly given, there are not more than six minims of Tr. opium in each ounce.

The terms of this Monthly Periodical are one dollar a year, in advance.

PART III.

MEDICAL MISCELLANY.

No. 1.—*Report regarding eligible Sites for Cinchona Plantations in Coorg.* By Assistant Surgeon GEORGE BIDIE, M.B.

(Communicated by the Principal Inspector General, Medical Department.)

While recently on a pedestrian tour through Coorg, I was struck with the suitability of a large tract of that country for the cultivation of Cinchona, and have thought it my duty to send this communication for the information of the Principal Inspector General, in case he should consider it necessary to bring the matter to the notice of Government. I entered Coorg towards its southern extremity, and gradually moved northwards, exploring the forests east and west as I proceeded.

2. Coorg is the central portion of the great mountain chain that separates Malabar from Mysore and the Carnatic, and varies in elevation from 3,500 to 4,500 feet above the level of the sea. Its climate is remarkable for its great perennial humidity, its heavy rain fall varying from 100 to 150 inches, and its cool equable temperature ranging from 55° to 75°. It may be said to be entirely covered with dense lofty forest, except the small portions cleared by the farmer and coffee planter. The soil throughout is a vegetable mould generally resting on decayed primary rocks, rich in felspar. The larger forests on the slopes of mountains and in gorges are characterized by *Myrtaceæ, Artocarpaceæ, Ebenaceæ, Guttiferæ, Enonymus, Canarium, Calophyllum, Dillenia, Lagerstœmia, Myristicaceæ, Cinnamomum, Cedrelaceæ, Michelia, Monosis, Polygaleæ, Araliaceæ, Areca, &c.*, and in their shade we have numerous *Orchids, Cardamoms,* two species of *Callamus* and *Piper.* In more open parts we have *Melastomaceæ, Ardisia, Rubus, Rosa, Callicarpa, Bamboos, Artocarpus, Jasminaceæ, Salix, Toddalia, Vaccinium, Caryota, tree* and other *ferns, Lycopodiaceæ, &c.*, characteristic of the vegetation.

3. In judging of the fitness of a place for the culture of Cinchona we must consider the nature of the soil and of the rock formation, the temperature and humidity of the climate, the elevation and the characteristics of the local flora. Un-

doubtedly the most reliable data are to be gained from the characteristics of the local flora, as constant relations exist between the flora and the climate and geological formation of the country. On the other hand, nothing can be more unsafe as a guide than the mere elevation of a District, for we find plants growing, say at 3,000 feet on the eastern flanks of the Coorg mountains, which would not live through a single season at the same height on their western slopes, and while in one range of hills in India the temperature diminishes at the rate of 1° for every 300 feet of elevation, on the Neilgherries the proportion is 1° for 340 feet, and in Khasia but 1° for 380 feet. Again, on the Andes the range of low land cultivation extends to nearly 6,000 feet above the sea, while in Teneriffe it does not exceed 3,000 feet, and in Southern India it certainly does not pass 4,000 feet. Impressed with these facts while investigating the flora of Coorg, the conviction was borne in upon me that although at a mean elevation of but 4,000 feet above the sea, I was nevertheless surrounded with a vegetation identical in its leading features with that of the bark districts of South America. There the characteristic plants are said to be *tree-ferns, palms, gigantic climbers, Bamboos, Plantains, Aroidæ, Cecropias (Artocarpaceæ), Melastomaceæ, Myrica*, &c., and in the opener parts of Coorg a similar flora, of which we have already spoken, prevails. The next questions that arose in my mind had reference to temperature, humidity and soil. In the region of the Cinchonas the mean temperature ranges from 62° to 68°, and the humidity is said to be excessive. In the higher parts of Coorg the mean temperature is probably from 65° to 68°, and these vast forests of which we have spoken give sufficient evidence of great perennial humidity of atmosphere. As to the soil and geological structure they agree exactly with those of the Cinchona zone of the Andes, where the soil is chiefly a vegetable mould, and the rocks of primary formation and rich in felspar.

4. The District of Coorg which I consider especially suited for the cultivation of Cinchona, may be said to extend from the Brummagherries in the south, to Mercara in the north, and from the crest of the Ghats on the west, to the longitude of Anandapoor on the east. At present all the better parts of the land in this tract are being secured by coffee planters, and in a few years, if matters go on as at present, the greater portion of it will be under coffee. If, therefore, I may be permitted to offer such a suggestion, I would strongly impress

on Government the necessity of at once securing as much of it as may be considered necessary for Cinchona plantations; for the districts in India suitable for such are neither numerous nor extensive, and the day is certainly approaching when we must be dependent on our own resources for a supply of the priceless bark.

HOONSOOR, *25th April*, 1863.

No. 2.—*Report on the Cultivation of Imphee.* By J. SHORTT, M.D., Zillah Surgeon, Chingleput.

1. With reference to the Proceedings of the Board of Revenue dated 10th December 1862, and the receipt of a small quantity of Imphee seed (about 4 oz.), forwarded to me for experiment, I beg to submit the following report.

2. The seeds consisted of different samples and were numbered 3, 13, 2, 5 and 11; they were all of the same kind of seed but differently grown, I believe, and were looking rather dark colored and musty.

3. The season for sowing the Imphee had just gone by, nevertheless I had a plot of ground, 30×32 yards, at the back of the Dispensary ploughed up for its reception. The soil was gravelly and greatly interspersed with stones, and was both high and dry. The country Cholum was cultivated on either side, and the plants were pushing out their ears, when, on the 2nd January 1863, I had the Imphee seeds sown broad-cast, and as the quantities were so small, the different numbers were mixed and sown together. The seeds sprung up well, but were subsequently thrown back by the want of rain, nevertheless they attained about 3½ feet in height, and began to push out their ears when between six weeks and two months old. The only difference between the Imphee and the country Cholum grown near it, was that the former was rather the smaller, and on close examination, its leaves were found more linear than those of the country Cholum. The flower spikes were also larger, being in shape like a pear with the rounded base uppermost, the panicles were looser, the peduncle with its pedicles supporting the seeds were covered with wooly glumes, the calyx slightly hairy; roots branched; culms erect, round joined; leaves linear and sheathing; flowers paired, one hermaphrodite and the other neuter.

4. About the time the plants were in flower, it rained rather heavily about the middle of March from which the stalks suffered. The sparrows, crows, parrots, and squirels that had been first attracted by the Cholum in the vicinity, when this was gathered, exhausted their force on the small plot of Imphee, and committed much damage on the ears, the smaller birds picking out the grain from the ear, while the larger ones carried away entire ears to feed on at their leisure; nevertheless 12 oz. of seed was collected, one half of which I beg to submit. As will be seen from the sample, the Imphee grown here is superior to the seed sown in the size and fulness of the grain.

5. The stalks were rather slender and juicy, the juice had an insipid sweetish taste. As the quantity of culms was small, and the stalks had not attained any size, I did not deem it fair on this occasion to test its sugar yielding properties, but hope to be able to do so next season as I have the 6 lbs. of seed sent by your Board on the 21st January 1863, and a portion of my own growth of this season in reserve.

No. 3.—*The Effect of "Petroleum," or "Rock Oil," in a case of Beriberi, with Remarks, &c.* Recorded by S. AROKEUM, Subordinate, Medical Department.

THE general and prevailing disease, as many are aware, among the Madras troops located in Burmah, ever since it became in possession of the British, (1824) is "beriberi," or a tendency to incipient nervous diseases, such as paralysis, &c., exhibiting in various shapes and characters, the lesion of nervous sensation, either succeeded or preceded by "fever," or dyspepsia; generally in many cases what I observed is the former gradually dwindling into "burning of hands and feet." Of the numerous cases admitted and treated in the hospital of H. M.'s 41st Regiment N. I. stationed in Rangoon, the following being an out-door case, recorded by me, will, I think, manifest the salutary effect derived from the internal administration of "Petroleum," or "Rock oil," only (which is very common in Burmah), preceded by eliminations. Though the available books I possessed and consulted comment nothing about its internal administration, for the disease so called "Beriberi," yet this oil gained its admission amongst the numerous skilful remedies prescribed by E. S. Tribe, Esq., Surgeon Major of

the Corps; and in many incipient cases, to my own observation, in junction with other remedies, it has arrested the progressing symptoms: being fully convinced of its efficacy, I prescribed this oil to those who sought my aid, in case of failure to exchange for the Arabic preparation "Treeak Farook," or the Indian remedy "Black oil" (Ol. Nigrum). Of the effect of the latter, on frequent conversation with an intelligent native practitioner, who informed me the invaluable use of this oil extensively in cases of "Chronic Rheumatism," (Voyavoo) and "Beriberi," (Thimir, or Soowth Voyovoo) which are, generally, very common among the sepoys of the Northern Circars, enjoined with strict diet *i. e.*, animal food and wheat cake, but only allowing a limited proportion of water to drink daily, during the period the patients are under treatment;—leaving the last mentioned alone, I beg to restrict myself only to Petroleum. The benefit of this oil, in combination with animal food and generous diet, in my case, appears to have evidently produced a decided change for fair recovery within a fortnight, by saving the patient from falling a victim to the fatal malady.

Case.—2*nd July*, 1860.—T. O., Æt. 34, A robust, healthy-looking man, of medium size, fair complexion, black curled hair, muscles well developed, father of two children, temperate habits, presented himself before me this morning, complaining of the following symptoms of some months' duration. General numbness of body; formication; unsteady gait; torpid bowels; tongue flabby and thickly coated; urine scanty and high-coloured; pulse small and quick; anorexia; occasionally sudden seizure of cardiac oppression; skin unusually warm. He has been indulging freely in using ardent spirits adding aromatic powders to it, being persuaded by a Native Doctor to take it for the disease he was suffering from, in spite of which the cardiac and other symptoms became alarming.

Omit taking ardent spirits.

℞. Hydrarg. Chlorid. grs. v.
Pulv. Jalap Co. ʒi.
Aqua Menth. Pip ℥ii. M. statim.

℞. Ol. Petrolei ʒss.
Acaciæ Gummi q. s.
Aquæ Menth. Pip ℥ ss. M. ter die.

To commence with a dose immediately after the operation of jalap and calomel ceases.

Terpentine stupe to the chest, according as the circumstance may require.

9th.—Continued taking the mixture regularly as I directed, having only had recourse to purgatives; and am glad to record here, since taking the mixture *(ordered supra)* he only felt the return of cardiac oppression four times during the week, and the other symptoms are gradually disappearing. He now can grasp any object firmly, and walks pretty steadily.

Increase petroleum 3 ss. to each dose. Petroleum friction to legs and arms.

20th.—Since last report, I visited him three times and found him improving in every respect. No cardiac symptoms complained of, wishes to return to duty, with promise that he would shew himself occasionally.

Discharged.

Remarks.—Though the singular contrast to the beriberic disease and its sequel presented here by the natives of India in different hospitals; I have observed that under the influence of the same climate, exposed to the same fatigue, which is deadly to foreigners as the subject of the preceding case, yet the cases of instantaneous recovery similar to the one above, among our sepoys, are comparatively few, to that of men "transferred" to India on sick certificate.

The meagre benefit of internal remedies, generous diet, and external applications of different preparations, inclusive of electricity to the spine and other requisite parts, used by many skilful and scientific physicians, and based on Physiological and Pathological principles, are partly attributable, I consider in my little experience, to the following causes, viz. :—

First.—The little or no influence we possess in patients' diet, while they are undergoing treatment in our Military Hospitals, and these men are, according to the Regulations ("Standing Orders") allowed to provide diet for themselves or by their orderlies when they become bed-ridden, which diet consists, in the majority of cases that have come under my notice for the period of nearly three years, of nothing but dholl, curry and rice, with or without vegetable, fishes, or dholl merely prepared into mullagatanny, if not curries, "achar" (consisting of onions, chillies, ghee and tamarind) forms a dish to many of the young thriftless sepoys. Occasionally animal food, in shape of a fowl, perhaps once or twice a week, which has to be equally shared

among the mess-mates *(Bheesy)*, generally four or more in number; the sudden withdrawal of animal food, from people habituated to its daily use, and the substituting of vegetables and fish, I suppose induce the system to become susceptible for the ready reception of beriberic virus, or a tendency to impair the nervous system for want of the above stimulus, as the following will illustrate the effect of nutritious diet in this disease.

A young man aged 24, native of Trichinopoly, sober and temperate habits, complained to me that he is suffering from torpid bowels, formication, and quite indisposed to discharge his duty, for a period of two weeks. I advised him to get his bowels opened freely by brisk purgatives, and to the liberal use of animal food, in addition to milk and butter. Seven or eight days after, he informed me the entire disappearance of the symptoms above described, without any recourse to other medicines, since which, not minding to the high price for milk and butter, at that place, he continued their use regularly. So the natives of India, in question, are very much addicted to luxurious living on the Coast and inland, as circumstances would afford them; and have been accustomed to the use of animal food once in their daily meal, especially Gentoos and Mahomedans, which they were prevented from procuring in Burmah, by the scarcity of all kinds they experience, by the remittance they made to their families, and amongst some more parsimonious than want of money. The people of Northern Hindustan, and Central India, appear to be less exposed to this disease than their Madras brethren, which I infer to the latter class is the change they undergo in a foreign climate abruptly, being deprived of animal food; as for the former class only a very slight deviation exists as far as food is concerned. There is another class of people attached to the Native Corps, (drummers and musicians) call our attention from the paucity of the beriberi disease shewing amongst themselves, and their families. The drummers, on foreign service in accordance to the regulations, draw European rations, which, with their batta (Rs. 5), enable them to be pretty comfortable; the musicians though they get rations and batta similar to sepoys, yet, receiving the band allowances, &c., monthly, and there being no religious prejudices with them in respect to food, &c., rendering them the means of living better than the sepoys. There have been a few cases of "Intermittent Fevers," followed by incipient beriberic symptoms occurred

among the families, but yielded easily under the use of brisk purgatives, "Petroleum," and liberal diet; in one or two cases I had recourse to "*Black oil.*"

The large number of admissions from this disease could be amended in a great measure, if the authority introduce the method of allowing a certain proportion (½ lb.) of mutton to each man, once a week, for all the Native corps while on foreign service, in places like "Burmah" and the "Eastern Settlements," deducting the value of it from their monthly pay, will not only lessen the number of admissions into hospital, but will produce a great saving to the "State" of the expenses of transfering constantly men on sick certificate to India, whilst the casualties and pensions for their families, &c., will also decrease in number. The patients in Military Native Hospitals require their diets to be inspected morning and evening daily, at the fixed hour, by the Native Officer of the day, with the assistance of Hospital Havildar, in order to report whether these men are duly provided with the proper diet prescribed by the Medical officers in charge, for the Officer Commanding's information; in default of not attending to the diet ordered for them, the patients are to be punished when sent out for duty.

Second.—So far as the little experience I gained by constant attendance at the bed-side of the beriberi patients, the disease indicates no proper diagnostic phenomena of particular symptoms to enable me to detect it, from a feigned one; while going round in the "ward," we often notice men with little or nothing the matter with them, apparently in good health, but complaining of almost every symptom of beriberi, imitating from the suffering person, quicked and feeble pulse, which is in many cases originated from starvation, being the only plan adapted to get away from foreign service, and a view to secure "sick certificate to India."

NOTE.—We have chosen to insert this paper just as we received it, rather than attempt any correction of its phraseology. We think it creditable to the observation and industry of 2nd Dresser Arokeum; and although his views are not expressed in perfectly idiomatic English, yet their meaning may be readily understood. We agree with him that the entire subject of the supply of rations to Native Troops in Burmah requires careful reconsideration, but instead of an official supervision of the diets which the men in Hospital furnish themselves with, we should prefer the establishment of regulations which would provide for the proper feeding of the men by the Hospital establishment, each patient being placed under stoppages during the time he is under treatment. Caste prejudices might create some little difficulty, but not an insurmountable one.—ED. *M. Q. J.*

No. 4.

A CONSPECTUS OF MEDICAL AND SURGICAL PRACTICE IN INDIA.

Cases of operations performed by Dr. PORTEOUS *in Triplicane Hospital.* Reported by Native Surg. MOODEEN SHERIFF.

CASE I.—CARIES OF TARSAL BONES; AMPUTATION OF THE FOOT BY PIROGOFF'S OPERATION; RECOVERY.

Meeraun Bee, Æt. 45.

3rd September, 1862.—An old emaciated woman, admitted this morning with caries of tarsal bones of the left foot, of about two years' duration. There are several deep ulcers on the dorsum of the foot, with sinuses which are full of maggots and lead the probe to the diseased bones. All the bones, except the os calcis, are affected. The patient is feverish, and complains of great pain and restlessness at nights, and expresses her desire to get rid of the foot. No cause assignable for the disease.

As the patient is not in a condition to undergo any operation, she was ordered to have tonics and nourishing diet. The maggots were removed and the foot dressed.

24th.—Besides the affection of the bones, the soft parts are so destroyed by ulceration, there is no other alternative to save any part of the foot, except by Symes' operation or any of its modifications; Pirogoff's operation was, therefore, performed this morning by Dr. Porteous, assisted by Drs. Montgomery, Cornish, Chipperfield, and myself, as follows:—

The patient being brought under the effects of chloroform, an incision was made from one malleolus to the other across the sole of the foot, then another was made from one point of the first incision to the other in front of the ankle joint, so as to form a very short semilunar flap with the convexity forwards; now the soft parts were divided, the joint dislocated, and the os calcis was sawn about its middle, leaving its posterior half in its place. Then both malleoli, with a thin plate of the articular surface of the tibia, were next sawn, and the operation was completed by bringing

the edges of the flaps together by silver wire sutures and adhesive straps with a wet roller over all. The bleeding was pretty profuse, and both the posterior and anterior tibial arteries were required to be ligatured.

During the first week there was much discharge from the wound, which did not unite by the first intention, but after that time it healed gradually by granulation, and the patient was discharged well on the 4th November.

Remarks.—Of all the modifications of Syme's operation at the ankle joint, proposed by many eminent Surgeons, none appear to be equally advantageous as the original one, except that of Pirogoff. As far as the operation itself is concerned, Pirogoff's has a decided preference to Syme's operation in being speedily and easily performed, there being no necessity for dissecting the integument from the posterior and under surface of the os calcis, which is the only difficult part in the latter. The stump in Pirogoff's operation appears also to heal more favorably; but, it is conical in shape, and its point with the thin skin of the back of the heel rests on the ground, which cannot so well bear the weight of the body as the broad, soft, and thick cushion of the sole in the stump of Syme's operation. The patient in the above case, however, has now provided herself with a leather bag with a soft pad in its bottom, which she wears on the stump and walks about limping in her house with the assistance of a stick.

The administration of chloroform in this case also requires a notice. The nose and lips were well smeared with oil, a piece of ordinary cloth (6 × 4 inches) was put over them, and then the medicine was made to drop on the cloth in front of the nose from a minim measure by keeping a finger at its mouth. The patient became insensible and fit for operation in a remarkably short time without any inconvenience, and the whole quantity of chloroform expended during the operation was only 3 drachms.

Case II.—Calculus Vesicæ; Lithotomy Operation; Recovery.

Rungasawmy, Æt. 13.

23*rd September*, 1862.—A small made and spare Pariah boy, admitted this morning into Triplicane Hospital with all the symptoms of a stone in the urinary bladder. There is frequent and painful micturition, and while the urine is

passing, it frequently and suddenly stops with pain about the root of the penis. The prepuce is elongated, and the boy is observed frequently to have his hands about the genitals, pressing the glans penis to relieve the uneasy sensation he feels there. His mother says that he has been subject to more or less irritation in the bladder for some years, but the micturition was never so painful as it has been during the last few months.

Dr. Porteous introduced a No. 4 catheter and detected a calculus in the urethra about the bulbous portion, preventing the passage of the instrument beyond its seat, and any attempt to pass it further causes a great deal of pain. All the symptoms the boy was suffering from, being now attributable to the presence of this calculus, Dr. Porteous began to dilate the urethra gradually by introducing catheters, with a view to be enabled to extract the stone by forceps, or crush it in its place by a lithotrite.

On the 6*th October*, No. 12 catheter was passed up to the calculus, and a No. 4 into the bladder under the influence of chloroform, when another stone of considerable size was readily and distinctly detected, and moved about from side to side. A lithotomy operation was now proposed with the consent of the patient's mother, but before this could be performed it was necessary to have the smaller calculus in the urethra removed. An attempt was made to get rid of it by injecting tepid water, but failed; and Dr. Porteous then introduced a lithotrite as far as the stone to crush it, but could not open the blades to lay hold of it.

24*th*.—The boy being found on examination quite free from all organic disease, prepared, brought under the influence of chloroform, and placed in the lithotomy position with his legs and hands tied in the usual manner on a suitable table, Dr. Porteous removed the stone in the bladder by lateral operation in the following manner, assisted by, and in presence of, many Medical and other gentlemen, the staff being held by Dr. Paul.

An incision was made in the perineum, commencing from median line fully one inch in front of the anus and carried downwards and outwards on the left side to an inch beyond the anus, midway between it and the tuberosity of ischium to the depth of about an inch. The left forefinger was introduced into the fore part of the wound, and with

little or no difficulty the membranous portion of the urethra was reached, when the groove in the staff could be distinctly felt; now the knife with its back upwards and point resting on the nail of the finger was guided to the groove, in which it was inserted, and with a slight pressure on its back, it was made to cut the parts along the groove, when it soon touched the stone and was withdrawn immediately. The finger with a slight force entered the bladder and the staff was withdrawn, and then the forceps were introduced guided by the finger, and on withdrawing the latter a gush of urine followed and the stone caught in the blades of the forceps, but slipped; it was seized again and brought out. The operation did not occupy more than a minute, and the blood lost was not more than a couple of drachms. The removal of the calculus in the urethra proved troublesome, it was pushed into the wound with some difficulty by No. 12 catheter, and removed by a finger. It proved to be merely an irregular flat piece of the stone in the bladder, apparently detached from it recently and lodged in the urethra, being prevented from its sharp and irregular angles in passing further towards the meatus.

The patient was removed to bed, made to lie on the left side, and wet lint applied to the wound.

Within a few hours, it was gratifying to observe the bloody urine dribbling away from the urethra.

Vespere.—Passed his urine partly through the urethra and partly through the wound. Is very unsteady, tossing himself about in bed, and his thighs are therefore secured together.

25*th.*—Slept well, urine escapes freely through both the urethra and wound.

In due course of time the wound healed, and the patient was discharged from the Hospital much improved in condition on the 25th November 1863.

Remarks.—The passage of the urine through the urethra within a few hours after the operation is the most interesting point in this case, and this was obviously owing to the dilated condition of that canal, which was caused by repeated catheterism previous to the operation. The boy was very uncontrollable and restless, tossing about in bed, and had it not been for this, the free escape of the urine through its natural passage from the time he was operated on, was

so advantageous that the wound would have healed within a much shorter time, than is usually necessary for that purpose on similar occasions. A few authors have recommended to dilate the urethra to some extent before performing the operation for lithotomy, but this is only with a view to pass the staff at the time of operation easily into the bladder. None have spoken of the dilatation in connection with the advantage experienced in this case in the after treatment, the point is, therefore, very interesting and deserves the notice of the profession.

The inhalation of chloroform in this case was also conducted in the same manner as in the preceding one (Case I, of Pirogoff's operation), the patient was very readily and conveniently brought under its influence, and the whole quantity expended was only 2½ drachms. The medicine has been since used in this way in several other cases, which I shall shortly publish, and in none of these its expenditure has exceeded 3 drachms. From the experience of all these cases, this plan seems to have several advantages, which may be summed up briefly as follows :—

1. That it is very economical, 3 drachms of chloroform being generally sufficient for almost all capital operations.

2. That it is one of the safest plans of giving chloroform, because it allows the vapour to be freely diluted with atmospheric air ; and because the medicine being used by drops, there is little chance of its accumulating in the blood to any dangerous amount at one time, which is one of the greatest precautions we should observe in its administration.

3. That it is very convenient, and offers no hindrance whatever to free breathing of atmospheric air, as is the case in other methods of using the drug on account of the necessity of having a hand or instrument in front of the nose and mouth.

4. That by using the minim measure in this plan, the quantity of chloroform expended can never escape our notice, even in the greatest haste.

The only drawback in this plan, as far as I am aware of, is, the nose and lips are sometimes blistered, but this can be prevented altogether by smearing them well with oil. Castor oil answers well for this purpose on account of its thickness. The piece of cloth should not be so large as to

cover the eyes, for it is occasionally necessary, during the administration of chloroform, to examine the condition of the pupils, and to judge the state of reflex function by touching the eyelids.

In Hospital at Perambore, Madras.

Under the Care of Dr. Mackay.

Local Anæsthesia.

J. O——, female, Indo Briton, Æt. 31. Nervous temperament.

This patient had suffered for nine months from a sore on the inner side of the point of the great toe in the right foot, which rendered her quite lame and unable to move about; a variety of caustics, ointments, poultices, &c., had been applied without any permanent benefit. An ulcer had formed, presenting excessively painful fungoid granulations, in which the nail was imbedded. A piece of ice was broken down into small fragments, and mixed in a mortar with about an equal bulk of common salt; a small quantity of this mixture put into a piece of muslin, was held in contact with the upper surface of the toe for about five minutes, the sharp point of a pair of scissors was then passed under the nail down to the root, at a little distance from the inner edge, the nail being cut through, the inner portion was extracted from its root, after which the ulcer rapidly healed.

This, though a simple, is known to be an exceedingly painful operation—one for which chloroform is usually administered; but the above less expensive and perfectly safe means answered all the purpose. The patient, a weak, nervous and excessively timid girl, acknowledged that she felt no pain whatever. A piece of wet lint was applied, and the circulation gradually returned without any excess of reaction. This simple, yet effectual, means of allaying pain, is one which, I think, deserves more attention than it meets with in superficial operations, where the part can be brought under the influence of a local anæsthetic. From three to five minutes will generally be found sufficiently long to keep the mixture in contact with the surface, but the exact length of time must depend on the depth to which it is necessary that the anæsthetic effect should reach. Equal

parts of ice and salt were used in this case, but it will generally be found preferable to use two parts of ice to one of salt, as a large proportion of salt has, in some cases, been found to produce redness and smarting.

In the Vepery Dispensary, Madras.

Under the Care of Dr. Montgomery.

Reported by Asstistant Apothecary R. Kinsley.

Hydrophobia.

Chellapen, Ætat. 39, male, Pariah, admitted ¼ to 9 A. M., 15th May, 1863.

A tall, muscular man, is said to have been hitherto in good health. About five days ago, he first complained of pain extending up the right upper limb from the hand, on the forefinger of which, it is said, a wound was inflicted about three months ago, by the teeth of a dog. A linear cicatrix is seen on the palmar aspect of the last phalanx of that finger. Some of his friends say that he was bitten a second time also, a month subsequently.

It is not known whether either of the dogs, or both, had rabies.

His whole body is now bathed in perspiration; the eyes are sunken and slightly blood-shot; breathing is hurried and sometimes sighing; and at every fourth or fifth respiration, spasmodic choking occurs, after which he spits up a large quantity of tough saliva. Excepting about the throat, no other part of the muscular system seems to be affected with spasms. He does not complain of pain, but at short intervals, shouts loudly as if from pain; is very restless and continually tossing his limbs about. Pulse is quick and small.

He is said not to have taken food for five days, and abstained from it because the sight of it brought on a "choking sensation." This is said to be particularly the case when he sees water.

A blister to be applied the whole length of the spine, and a solution of atropine (containing gr. 1-20th to 3i.) to be applied to the blistered surface.

A large opium suppository. Chloroform liniment to the spine. Nutrient enemata to be frequently given.

10 A. M.—He continues to be very restless, and spits up large quantities of tenacious saliva; is constantly talking rationally, complains of being hungry and thristy. A small quantity of broth was given to him, which he showed a willingness to take, but pushed it away with a shudder when the vessel was brought near his mouth. Hands and feet clammy and cold. The whole surface of the body is still perspiring profusely. Pulse thready.

Had an enema of O ii. of broth.

12, *Noon.*—Is not so talkative, and appears to be more exhausted. Pulse smaller and weaker.

1 P. M.—No change.

Repeat enema of broth.

2½ P. M.—About half an hour ago, the jaws became firmly fixed and the limbs convulsed, and have continued so up to this time without intermission.

Died.

No *Post-mortem* examination.

In the Civil Dispensary, Madras.

Under the Care of Dr. Paul.

Reported by Assistant Apothecary C. D'Santos.

Hydrophobia.

Meenachee, aged 5 years, female pauper.

A native girl of spare configuration of body, admitted into the Civil Dispensary attached to the General Hospital on the 17th June 1863, at 6¾ A. M., in the following condition.

Foaming at the mouth, the child is lying on her back, tossing her arms and legs about incessantly, and making frequent efforts to remove with her right hand something from her throat, or the frothy saliva which is filling her mouth as rapidly as it is removed by her efforts. She is frequently screaming loudly, and calling out "Ummah." There is no difficulty of breathing, although the thorax is remarkably elevated as if the inspiratory muscles were in extreme action. The whole condition of patient is expressive of fear. Some irritability of the surface of body is present, as is evidenced by the child being thrown into a state almost approaching a convulsive fit on the body being

touched even slightly; during this fit breathing is partially suspended, and at its termination there is a struggle to restore the balance of respiration. Paroxysms of this description are also induced on dropping the smallest quantity of water into the mouth or over any part of body. Eyeballs prominent; conjunctivæ injected; eyelids fixed, wide open, but are firmly closed when the cilia are touched by a feather; but a few minutes later this reflex irritability became lost. On closing the eyelids and slightly pressing on the globes of the eyes, the patient screams and is thrown into violent spasms. There are no spasms of the muscles of the face, and the jaws are not set—on the contrary they are opened widely in the attempts to scream and to spit out saliva. The levator labii inferioris and orbicularis oris have lost power, as the lip hangs down, and the saliva, which is not viscid but thin, dribbles over the front as well as from the angles of the mouth.

On introducing a spoonful of water into the mouth, not even the smallest portion of it is swallowed, but the whole is thrown out immediately on reaching the pharynx. Notwithstanding this inability to swallow the patient is constantly asking for water. When a spoonful of fluid is offered, she opens her mouth and allows it to be poured in, and makes active attempts to swallow it. Although no water is swallowed, the constant moistening of the mouth with fluid arrests the foaming. The sight of water, or the agitation of fluid contained in a basin near the patient, does not occasion fear nor induce spasm. Bowels are stated to have been regular, and other functions normal, up to 8 o'clock last night, at which time the above symptoms set in.

9 A. M.—Swallowed a few spoonsful of soup without being thrown into spasms, although not without some difficulty;—had an enema of soup, which, however, was immediately rejected with considerable force as if from sudden spasm of the rectum. Pulse quick, small, feeble; skin of normal temperature. The eyeballs are constantly moving convulsively, probably from spasm of the recti muscles. The corneæ are slightly opaque and roughened on the surface. There is no closure of the lids on advancing the finger towards the cilia. It would appear that vision is lost.

9¾ A. M.—Swallowed three spoonsful of soup. Small fragments of ice put into her month were chewed and swallowed.

10 A. M.—Unasked by any one, she states that a dog bit her. She also states that rain is about to fall, "What am I to do?" The spasms do not recur so often; is quieter and does not call out "Ummah" so frequently. Just vomited a little clear fluid, keeps her mouth closed, but opens it readily whenever asked to do so.

10½ A. M.—Is continuing pretty calm; occasionally tosses about her legs; does not start on dropping water on her person, and takes a little soup when given her.

11 A. M.—Vomited after taking two spoonsful of soup; is beginning to jactitate again. Pulse imperceptible; hands and feet cold.

11¼ A. M.—Swallowed two drachms of wine.

11½ A. M.—Vomited a large quantity of fluid; has rolled into a prone position; much jactitation and frothing at mouth.

12¼ P. M.—Is very low and exhausted; is now lying quietly on her back, and breathing heavily and moaning. Number of respirations 36 in the minute. Pulse not perceptible at wrists; trunk hot; hands and feet cold. Two convulsive fits with marked opisthotonos occurred within the last ten minutes; makes an attempt, but is unable, to open her mouth when called on to do so. General sensibility appears lost.

12-25 P. M.—Just expired without a struggle.

History.—The parents of the child state that about the 20th of last month she received a bite on her upper lip from a dog which was being reared in their house, that the dog was not mad, and that the wound healed kindly in a very short time; but what, if any, treatment was employed in the healing of the wound could not be elicited. Patient is stated never to have complained of any feeling of uneasiness or indisposition till 8 o'clock last night.

Post-mortem Examination of body at 5 P. M., 17*th June*, 1863, 4 *hours and* 35 *minutes after death.*

General Appearance.—Body spare; no rigor mortis; it had most probably passed off previously. There is a linear cicatrix half an inch in length, extending directly outwards and to the left from the columna nasi. The friends state that this is the result of the dog bite.

Head.—On removing the calvaria a few turged veins were seen through the dura mater. Upon the surface of the arachnoid, along the superior borders of each hemisphere, there were numerous adherent small patches of opaque lymph, looking much like glandulæ Pacchioni. The brain itself was healthy; lateral ventricles contained about the normal quantity of serum, but of a reddish colour. The choroid plexuses were highly injected, as were also the vessels of the velum interpositum. The corpora striata and thalami optici were healthy, but the soft commissure was diffluent. The third nerves were very brittle, so that they broke off on being touched with the forceps. The medulla oblongata was found to be somewhat softened, and the boundary between its grey and white portions not appreciable. The floor of the fourth ventricle was softened, but the auditory nerves appeared healthy. Cerebellum healthy; corpus rhomboideum well marked. The upper portion of the spinal cord was also slightly softened, but there was no congestion of its substance nor of its investing membranes.

Thorax.—Lungs healthy, crepitant throughout, except at their posterior aspect, where there was some hypostatic congestion. Heart normal in size and structure; a rather firm yellowish clot was present in the right ventricle, which it nearly filled, and extended also into the commencement of the pulmonary artery beyond the semi-lunar valves. This may probably be accounted for by the tranquil mode in which life became extinct.

The back of the mouth, pharynx, and œsophagus were, as well as the upper portion of the wind pipe, next laid open and examined, but nothing abnormal was to be seen. The gastro-pulmonary mucous membrane, so much of it as was examined, was perfectly free from congestion; it was even unusually pale.

Abdomen.—The stomach was contracted, the rugæ very prominent and pale, a dirty grey tenacious mucus covered the splenic end. At the pyloric end a large ascaris lumbricoides was present. The other organs of the abdominal cavity were not specially examined, as they all appeared healthy.

In the above case the aversion or dread of fluids, from which the disease derives its name, existed at first only so

far as to exclude the contact of fluid with the surface of the body, or admission of it into the mouth ; but as the disease advanced, the patient not only drank, but also evinced no alarm at the idea of fluid. She was calling out for water ; and not only did she call for drink, but she also drank without fear. She deliberately opened her mouth when asked to do so ; and although swallowing at first was impracticable, it was accomplished subsequently with moderate effort on the part of the patient and some persuasion on that of her attendants. This case, therefore, proves that horror of fluids is not always present, although the disease has received its name from this symptom alone. But, the frothy saliva which poured from the mouth in a continuous stream when fluid was withheld, the convulsive respiration aggravated by the slightest impression on the surface of the body, the extreme jactitation and expression of fear augmented at first by the slightest touch on the person, the prominence of the eyeballs, and apparent insensibility of the eyes, and the peculiar frequent screams which were heard at some distance, were symptoms, combined with the history, sufficient to remove all doubt as to the case being one of Hydrophobia.

There is one point, however, in regard to the *history* given of the case, which attracts notice, and that is, the statement alleged by the parents of the child to the effect that the dog which inflicted the bite, to which alone the train of symptoms that led to the patient's death can be referred, was *not mad.* Whether this statement is correct or not, it is impossible to say,—it may, however, be that the dog might have been affected with rabies, though only to such an extent as to constitute what some have termed dumb madness, so that the actual state of the animal might thus have been mistaken. And the question arises, *Is the bite of a healthy dog, inflicted when it is under the influence of rage, sufficient to produce symptoms of Hydrophobia ?*

The account of the post-mortem appearances in this case shows a sufficient amount of lesion (softening) of parts of the nervous centres to account for some of the symptoms exhibited—as loss of vision, convulsive movements, the peculiar respiration, &c. ; but considering that the period of incubation was limited, it may be concluded that the poison was yet circulating in the blood, and acted through this

medium, without localizing itself in any particular structure or organ, in producing the group of symptoms, which preceded the child's death. Softening of the medulla oblongata is not peculiar to this disease, but is found after death from other and widely different diseases.

As a fact worthy of some notice it may be here stated that hydrophobia, which has been rarely heard of in Madras, has lately proved fatal to three persons. One fatal case occurred very recently in the Vepery Dispensary, the next was the one above detailed, and a Private of H. M.'s 69th was carried off by the same disease on the 18th Instant.* Perhaps seasonal influence may have operated in some manner in developing the disease in these individuals, although atmospheric heat is believed, by those who have studied the subject, not to be the cause of the development of the disease in dogs.

In the Hospital of H. M.'s 69*th Regiment.*

Under the Care of J. H. Whittaker, Esq., *Assistant Surgeon.*

Case of No. 727, Private John Strong, 69th Regt. Admitted 17th June, 1863, and Died 18th June, 1863; Disease, Rabies.

An Englishman, laborer, aged 29 years, service 5 years, of which in India 3½ years. General character bad, habits intemperate, temperament nervous. Was brought to Hospital at 8½ P. M., 17th June 1863, complaining of dyspnœa, oppression of chest, and tightness and constriction about the larynx and trachea, with inability to swallow liquids. States that he was seized with shiverings on the morning of the 17th June, when on fatigue duty "washing tables," which he imagined to be an attack of ague coming on: that subsequently he went to the Canteen for a drachm of arrack, which he partook of with much difficulty, since which time he has neither partaken of food or drink; the sight of fluids brings on a return of the tremors. When questioned, as to whether he had ever been bitten by a dog, or other animal, he states that about two months ago he was bitten by a puppy, and points to a scar situated over the metacarpo-phalangeal articulation of right thumb, as the mark of the wound; he did not think anything of the bite, and neglected adopting any precautionary measures concern-

* These cases, it will be seen, are reported in our present number.—Ed. *M.Q.J.*

ing it. The dog was destroyed a few days afterwards, as he was observed to be strange in his manner, and attempted to bite every one who came near him.

When first seen on the evening of the 17th June, he was ordered an antispasmodic draught, and mustard poultices to chest; the draught was taken with some little difficulty; after which he was much quieter until 7 A. M., 18th June, when he was seized with a peculiar trembling and spasmodic twitchings about the hands and face, with heavy breathing and moaning. Face pale; countenance expressive of intense fear, with a wild look about the eyes: complains very much of tightness across the chest and constriction of the larynx. No abnormal sounds could be detected on stethoscopic examination. Heart's action feeble; hands cold; pulse small and weak, 60, intermittent after every sixth beat; bowels not moved since admission; no redness or inflammation about the cicatrices of the wound. Expresses great horror at the sight, or ever at the mention of fluids; takes his medicine with a great deal of trouble.

Ordered a Turpentine and Oil enema. Ung. Hyd. Fort. 3 ss to be rubbed into inside of thighs occasionally. Frictions to chest and spine, with a blister over the course of the pneumogastric nerve, and draughts containing 3ss. Tinct. Cannabis Indica every hour. Ice to be given as he complains of thirst.

10 A. M., *18th June.*—Has had two slight convulsive fits since last report; states the slightest current of air increases his difficulty of breathing; bowels freely moved by the enema. No change in the expression of countenance; pulse the same.

Continue Ointment and Antispasmodic draughts, with frictions; in the event of an increase of the paroxysms, a draught with 3 ss. of Chloroform to be given.

12, *Noon.*—Convulsive paroxyms becoming more frequent, an interval of about 20 minutes between each. Complains of light and people moving about as increasing his sufferings; it is a matter requiring great persuasion to get him to take his medicine or allow himself to be approached. Requests the attendants not to come near him; is very restless, and looks around with a wild and anxious expression; skin covered with a clammy perspiration; pulse as last report

Treatment to be continued.

2 P. M.—Little or no change since last report; the fits, I think, a little more frequent and severe.

Repeat treatment.

5 P. M.—Convulsive attacks much more frequent and of longer duration, accompanied by loud moaning, and foaming at the mouth. Pulse 62, weak; refuses to take anything; is quite sensible in the interval between the fits, and is constantly entreating that no person will be allowed to approach him. An attempt was made to get him under the influence of chloroform, but he became exceedingly violent, and would not permit it to be held near him.

8 P. M.—Paroxysms recurring frequently, and he is becoming incoherent; mucus accumulating in the throat, the air passing through it during a paroxysm, makes an occasional sound somewhat resembling the bark of a dog: it is quite impossible to administer anything to him.

10 P. M.—Had several exceedingly violent convulsive fits since last report, from the effects of which he appears to have become completely exhausted, and is becoming comatose. Sank gradually and expired at 10-45 P. M., 18th June 1863.

Post-mortem appearances twelve hours after death.

Head.—On removing the calvaria, about five ounces of serous fluid escaped.

Cerebrum.—Undue vascularity of the pia-mater, particularly at the upper portion of the hemispheres, the membrane here presented a mottled appearance, and in two situations distinct ecchymosed spots; cerebral ganglion rather vascular, and of a deeper color than usual; a few opaque spots were observed scattered over the arachnoid. Lateral ventricles contained fluid of the ordinary color and quantity. Vessels of choroid plexuses highly injected, as well as those of velum interpositum.

Medullary substance very vascular; this as well as the cortical structure presented no softening. On the contrary there was a degree of firmness of texture seldom observed in a healthy brain.

Cerebellum.—The grey neurine and the medullary matter exhibited the same characters as were observed in corresponding portions of the cerebrum.

Medulla Oblongata and Spinal Cord.—Membranes natural, excepting the pia mater, which was uniformly vascular throughout: no fluid seen between the layers of the arachnoid. Substance of cord healthy.

Thorax.—Both lungs congested; old adhesions in right; bronchi contained a large quantity of frothy sputa; lining membrane of larynx and trachea slightly vascular, with increased secretion; heart healthy.

Abdomen.—Liver congested; gall bladder loaded with bile. Other abdominal viscera healthy.

It was observed that the blood throughout the body was in a fluid state.

Notes of a few Cases that occurred in the Tellicherry Dispensary. By M. C. FURNELL, Zillah Surgeon, Tellicherry.

WOUND OF ABDOMEN; PROTUSION AND PERFORATION OF INTESTINES; RECOVERY.

Raman, a Tier, Æt. 22, was admitted Dec. 14th. The history was, that on the previous day (13th) he was, in the morning, gored by a bull; that at first there was little if any protusion of intestines, but from being carried a long distance, first to the Police thannah, and then to Tellicherry, several miles from where the accident occurred, the protusion gradually took place. When seen by me there was a lap full of intestines covered with a thin cloth adherent to them, and the whole was dry and begrimed with dirt. The man was pale and depressed, had slight hiccough and a fluttering pulse.

Having administered some wine, I removed the cloth and washed the intestines with warm water and a soft sponge, and proceeded to return them. After a few coils had been introduced, there suddenly took place a squirt of bloody, grumous fœcal matter from the piece of intestine in my hand, the first intimation I had of its being perforated—the hole was easily found large enough to admit the end of an unmade quill. I proceeded to pass a ligature round this by pinching up the gut in my forceps, the attempt made matters worse; so soft and congested had become the coats of the intestines, they tore and broke down under the forceps. It was determined then to try and sew the hole up with a fine

needle and thread, and a messenger was sent to obtain the needle. Whilst he was gone, I continued to return the coil, and found to my astonishment, that, although firm pressure was needed to push the intestine through the small aperture of exit, no more fœcal matter exuded ; the hole seemed effectually plugged by the mucous membrane from inside. Under these circumstances the intestines were returned as they were, without any suture, and the external wound of the abdominal parietes closed.

There was immediately given to the patient—

6 A. M.—Tinct. Opii. 3i. in Port-wine ℥ii.

At 7 A. M.—Tinct. Opii. ♏ xl.

8 A. M.—The patient not being asleep, Tinct. Opii. ♏ xl. was repeated.

1 P. M.—Tinct. Opii. ♏ xl. in Port-wine ℥ iss. He slept about an hour after this, and continued drowsy and quiet.

8. P. M.—Sleeping.

9. P. M.—Tinct. Opii. ♏ xl., Wine ℥iss.

11. P. M.—Tinct. Opii. ♏ xl., Wine ℥iss.

12. P. M.—Tinct. Opii. ♏ xl. repeated.

So that he took 3 v. of Tinct. Opii. in the 18 hours, from 6 A. M. to 12 at night.

15*th*, 6 A. M.—Slept well during the night; is thirsty; lies in a comfortable position ; breathing easily. Skin warm ; pulse 84; abdomen not hard, not painful on pressure ; tongue furred ; looks drowsy ; has not micturated.

To continue the opium during the day sufficiently to keep up this drowsy state.

8 P. M.—Skin warm and moist ; tongue moist ; abdomen somewhat tumid ; pulse 96, inclined to be hard ; complains of thirst.

Passed Catheter ;—Tinct. Opii. ♏ xl. at once; may have fresh cocoanut milk to drink.

16*th*, 6 A. M.—Lying comfortably ; skin warm and soft ; pulse 80, moderate volume; tongue dry and furred, with a bright red streak down centre ; abdomen less puffy, soft, bears pressure tolerably. It is now 68 hours since his abdomen was perforated, and 48 hours since we returned the intestines.

To have opium again during the day; may now have a little conjee water and the cocoanut milk.

8 P. M.—Attempted to pass catheter as he had not urinated since it was last passed; failed; he is in every respect better.

He has had during the day Tinct. Opii. 3 i. in two doses; to have at bed time 40 minims more.

17*th.*—Slept well; looks comfortable; passed a quantity of urine after my departure last night. Skin warm and moist; pulse 76; tongue becoming moist and losing its red streak.

Dressed the wound and took out the stitches, about half an ounce of thick laudable pus exuded.

From this time the man progressed without a bad symptom. On the 26th, twelve days from admission, the bowels not having been moved, he was ordered a warm water enema, which brought away a quantity of very offensive fœces. After this the bowels acted regularly, and he was discharged on January 24th quite recovered.

Now the question is,—Ought these intestines to have been returned without the hole being ligatured? For some remarks on this point, vide Holmes' System of Surgery, Vol. II, Art. Injuries of Abdomen.

Wound of Axilla.

Conjee Cootty, a Tier, Æt. 50, was admitted with a frightful wound in the axilla. Whilst thatching he slipt off the roof of a house and fell on a bamboo stake, which, entering the axilla, passed out above the clavicle just exterior to the sternal attachment of the sterno-mastoid muscle; and there snapped off, leaving a piece of wood some inches in length in the wound. How the axillary and sub-clavian vessels escaped is a puzzle. They did however. The stake being extracted little or no hæmorrhage ensued, and after a most tedious attendance of some three months, caused by the tissues around the wound having extensively sloughed, he was discharged cured. Strange to say despite the serious nature of his wound, the man had not the slightest constitutional disturbance from the day of admittance to his discharge. This exemption, on the part of the native, is often noticed, and is usually ascribed to his sobriety. It

scarcely holds good, however, of the Tier toddy-drawer who is anything but a "Teatotaller." I think the cause of immunity must rather be looked for in their simple vegetable diet.

Epithelial Cancers.

There is a very common disease in this coast which I do not remember to have seen (nearly so often) in any other part of India. Cancer of the mouth and face, Epithelioma, Epithelial Cancer. It also very frequently shews itself on the penis. The question is,—What is the best treatment for this fearful malady, for fearful it is—a cause of annoyance, pain, loathing and ultimate death to the poor object of its attack. There are only two courses I know of open to us—free excision with the knife, or destruction by caustic paste; and, unsurgical as I feel it seems, I prefer the latter *as a cure.* I will give from several cases the following.

Kanan, a Tier, Æt. 32, had suffered from Epithelial Cancer on the lip for about one year. It was removed by Dr. Rule (my predecessor) on November 24th, but it reappeared before the wound was healed—a very common occurrence in these cancers if ever so freely excised. When I saw the patient, January 21st, the growth occupied the greater portion of the right side of the upper lip. I wished to operate again, the man declined, and so consequently the following treatment was adopted. Equal parts of Potassa Fusa and Quick-lime were reduced to powder, intimately mixed, and then made into a paste with Spirits of Wine. This, applied freely to the growth, produced a marvellous effect, the cancerous mass melted away under it: (it is as well before applying this preparation to cover the neighbouring healthy tissues with Cerat. Resinæ to prevent the paste spreading to and destroying them). The paste was again applied after an interval of a day or two, and so on, time after time, until the mass was completely destroyed. In March all trace of the disease had disappeared, and the man went away.

I have not seen him since, so I presume he still remains well.

Conjee Koottee, Æt. 55, came before me on Oct. 10, 1862. He was suffering from Epithelial Cancer, which more or less involved the whole left side of the face, extending to the right commissure of the lips. It would more correctly de-

scribe the state of things to say, it started from the right commissure of the lips, included the whole upper lip, passed along the left ala of the nose, which it just avoided, to the outer angle of the eye down the cheek, all of which it included, and so along the under lip, to the part from whence it started ;—in fact, half the man's face and more was a mass of epithelial cancer. Hopeless as it seemed, the paste was repeatedly applied, but it gave so much pain, that after a few applications the man discontinued his attendance.

After about a month's absence he returned, the disease had increased, it bulged out and seemed to be indefinitely extending outwards, not implicating more of the face. The parotid gland was now enlarged and knotty, behind the ramus of the jaw.

After repeated solicitations on the part of the patient, I consented to operate.

December 20th.—The mass was removed, the hæmorrhage, as might be expected, was prodigious from the abnormally enlarged vessels, and the man denuded of half his face was a repulsive object enough. He made an admirable recovery; the mucous membrance of the upper and lower maxillæ became joined to the outer skin; his chief difficulty was the flow of saliva; his gain, that a hideous mass which made him repulsive to others, and was a cause of loathing and perpetual pain to himself, was gone. He could eat now and slept well, regained his spirits and became stout. After a month he left the hospital with not the slightest sign left, save the gap, of epithelial cancer.

Alas! whilst I am writing, little more than three months from the operation, the man has returned, his general health and appearance are good, but at the root of the two lower incisors are two small corroding cancers, the size of coffee beans, of unmistakeably malignant aspect; to them the paste is being applied.

It will be seen in this case, that although excision was as freely practised as it possibly could be, the enemy returned, being but temporarily driven out as it were, not destroyed.

The following case more fully exemplifies both treatments —knife and paste, or paste versus knife as it were—with victory, I think, for the paste.

Palakul Mayen, Æt. 40, a Moplah, applied January 13th, with an Epithelial Cancer exhibiting the usual characteristics,

implicating the centre of the right cheek and extending to the right commissure of the lips. On the 14th January the whole mass was removed, including a great portion of the parotid gland; the hæmorrhage was very great and controlled with difficulty; the angle of the mouth was brought together with a hare-lip pin and united readily; the wound healed readily and, when last seen, presented a healthy granulating surface nearly well, and he went home.

February 26th.—He returned, when it was seen that the hole left from the previous operation was filled up by a fresh epithelial growth. I again removed the foreign growth, extending the incision very freely back, so that when removed, nothing to the touch or sight seemed left from whence the mass might spring again. It did, however, return just as before. The man went away apparently all right, but came back about the middle of March with a button-like excrescence of the true cauliflower epithelial aspect sprouting up. This I attacked freely with the paste until it was quite destroyed, and when he left again in April, the wound was healed and perfectly healthy.

The penis is, as I remarked above, often attacked, and generally (luckily) old men are the sufferers. I have hitherto eased them of their complaints (and their organs) with one stroke of the scalpel. There is, however, at present a young man under treatment in the Dispensary, the whole of whose penis, save a small portion of the glans, is attacked, and who is patiently undergoing the treatment by the paste, with a view to its preservation; and if successful, how great the gain to the patient!

The following case I quote from memory.

When in charge of the 17th Madras Native Infantry at Banda, a young sepoy applied whose penis was very much implicated with this fearful malady. He was a Rajhpoot, a fine tall handsome man, and he steadily refused the mutilation, recommended by myself and Dr. Davidson. This paste was accordingly applied and with great success; it was the first time I tried it. Before the cure was established Dr. Doyle succeeded me in charge. We subsequently met marching South, and he informed me our patient completely recovered.

One word as to the practical application of this remedy. If it be found that the parts around become angry and put on

the red blush of incipient inflammation, stay its use. I am content if I gain upon the growth, so that I do so *surely*, I care not how *slowly* it is being destroyed. *Festina lente* is the motto here; and it seems to me, though difficult to say why, that the *more slowly* the *more surely* the disease is destroyed.

Tumors.

Kanen, a Tier boy, Æt. 11, presented himself with a large tumor filling the axilla of his right side. It extended in front over the pectoralis major, filled up the whole axillary space, and burrowed behind under the scapula. It was of formidable dimensions, and was reported to have been lately increasing rapidly. The boy was otherwise much emaciated; as it interfered with his occupation—weaving—in fact, he could not bring his arm to his side, it was determined to remove it.

This was accomplished with the assistance of Mr. Avent, Assistant Surgeon, 66th Regt., who was passing through Tellicherry. On dissection the tumor was found to be of even greater extent than we anticipated, burrowing upwards under the pectoralis minor, as well as under the scapula. During the operation a good deal of hæmorrhage took place from the accidental division of the subscapularis, caused by the man who held the arm suddenly lifting it up and rotating the scapula outwards, thus bringing it into contact with the knife. The boy was so thin and emaciated that this sudden loss of blood had, for a few minutes, a very alarming effect on him, from which, however, we happily rallied him. The tumor was found to weigh 1 lb. 12 oz.; it was a lobular fatty tumor of mixed character, some of the lobules, when cut open, being fibrinous in texture.

The boy made a rapid recovery, and was discharged much improved in appearance and quite cured, September 9th, three weeks from the operation.

Mahommed Hossain, Æt. 41, Head constable.

September 11*th.*—A tumor, having the dimensions of a good sized orange, and which had been growing twelve years, was removed from the posterior aspect of the neck. Owing to the great thickness of the tissues and the depth of the tumor's lower attachment, some little difficulty and time was experienced in its removal.

He had some bad symptoms afterwards, simulating at one time phlebitis, from which he happily recovered, and was discharged cured September 20th.

NECROSIS OF HUMERUS; REMOVAL OF DISEASED BONE.

Odiota Canan, a Tier, Æt. 30, looking considerably older, a peon in public employ, presented himself suffering from necrosis of both humeri. His story, a strange one, is as follows. Twelve years ago he had small-pox; on his recovery a boil formed in each arm about the insertion of the deltoid. One day flinging a stone to frighten a crow away, he felt something snap in his right arm, which immediately became powerless, and has since been more or less "*sick*." On passing a probe a piece of dead bone can be easily felt.

Being placed under chloroform, the bone was cut down upon, and being seized with a common tooth forceps, was, with some little force, extracted. It was excessively offensive and an enormous quantity of pus followed on its removal.

On passing the probe down the hole left by the extraction of the bone, more bone could be felt quite at the bottom.

November 11*th.*—Three months almost since the first piece was extracted a second piece was removed; it had worked its way up not only to, but beyond, the aperture, whence the first was taken out; the man of course, after the manner of natives, having been irregular in his attendance. His right arm is now perfectly cured and strong, enabling the man to work with it. The left arm is still suffering and will be operated on, when fit.

EXTENSIVE WOUND OF THE CHEST; RECOVERY.

Aumunder, Æt. 14, Nair, was brought into the Dispensary, March 28th, with a very curious wound. He had been watching in the fields in one of those slight elevated erections, so often seen in this country, when a wind storm came on and blew down his lodgment. He fell on a large blunt ended bamboo, which entered his chest a little to the left of the sternum between it and the nipple, staking him.

The wound, when first seen by me, was a large jagged opening, communicating with the cavity of the chest. The 6th, 7th, and 8th ribs were torn away from their connections to the sternum, and one could easily pass one's finger into

the mediastinum and feel the heart beat against it. Such an examination, however, was made but once to ascertain the nature of the wound and search for any foreign body which might have remained, all meddlesome probing was carefully avoided, the wound was brought together as best it could be, and a large binder passed round the chest.

March 31.—Doing well; wound dressed.

April 7*th.*—Not seen the boy since last entry, being absent from the station. I find him, on return, much improved. External wound healing, the discharge of pus is made to drain away by turning the patient on his face.

15*th.*—Wound much improved; some fever.

To have quinine ter die.

20*th.*—Convalescent.

No. 5.—*Remarks on* Mr. G. Norton's *Deodorizing Fluid.* By J. J. Wood, Assistant to the Professor of Botany and Materia Medica, Medical College, Madras.

Mr. Norton's Deodorizing Fluid, notices of which appeared some short time ago, not only in the newspapers, but in this Journal also, is beginning now to be pretty extensively used, both by private parties and Government officials in Madras, as well as in the Mofussil.

I happened to be one of the witnesses of the experiments instituted by Mr. Norton for testing its value, and I must, in all candour, affirm, that I looked upon it as a discovery, not only fortunate for himself, but of the greatest importance to Society.

Some of the experiments performed on the occasion, there can be no harm in detailing here.

1. A quantity of water, impregnated with Sulphuretted Hydrogen artificially prepared for Professor Mayer's class experiments, was almost instantly deodorized by a small portion of this fluid. This mixture of the two fluids, on being set aside for a while, presented a precipitate, very much resembling sulphur in an impalpable powder. The latter, however, none of us were at leisure enough to examine.

2. The same result was obtained with the Hydro-sulphuret of Ammonium.

3. Having procured some fluid from the *drains*, black and exceedingly offensive, (strongly impregnated, as it always is, with sulphuretted hydrogen, and, probably, other unascertained compounds, the results of the decomposition of a *variety* of organic matters,) it was subjected to the same process, *i. e.*, of adding a little of the fluid to it pure, and the effect was that in a few moments, there appeared to be hardly any odour left than that of tar.

This last experiment has been repeatedly performed, and with the same success.

During the course of these experiments, it struck me that it would be well to ascertain whether the fluid in question had any power over other odours, *i. e.*, organic odours, not the result of putrefaction.

Having obtained some of the flowers of the sterculia fœtida, I plunged a small bunch of them into some of the fluid, in the presence of Professor Mayer and others, and in a few seconds the odour peculiar to them could not be recognized.

My next experiment was with one of a pair of socks *that had been worn* (by a person accustomed to walk much) and cast off for the washerman: the sock, after immersion in the fluid for a few moments, was entirely deodorized; the only smell perceptible being, as usual, that of tar.

Mr. Apothecary R. Barrow also experimented with it, and communicated a discovery to Mr. Norton which, I doubt not, will be hailed with delight by the lovers of the Meerschaum and cigar: it is, that the mouth and mustachios of the tobacco-smoker are instantly deodorized by a gargle or wash made of a wineglassful of the fluid mixed with four or five times the quantity of water. The taste of the fluid thus diluted is slightly alkaline, and therefore far from unpleasant.

The above has been repeatedly tried and confirmed since by others.

Mr. A. Blacklock, the Physician to the General Hospital, has completely succeeded in deodorizing the evacuations of dysenteric patients, by directing about a teacupful of the

fluid to be poured into the chamber vessel beforehand. He has further tried it in a variety of ways, particularly in the large privy attached to his hospital, and he states that "it is the most effectual and permanent deodorizer" he is acquainted with.

Dr. J. L. Paul, the Surgeon of the General Hospital, and his assistants, have used it in gangrene, sloughing, and cancerous ulceration, in fact, in all such cases where a deodorizer would be desirable, and with the usual satisfactory results.

Mr. Wilkins, Professor Chipperfield's Assistant, gave it a trial in the Dissecting Rooms of the College, and I here subjoin his remarks :—

"I have experimented with Mr. Norton's disinfecting fluid in the Dissecting Rooms of the Medical College, with the following results :—

"Into a vessel containing a portion of the body in which the process of decomposition was far advanced, I poured a small quantity of the fluid, and within twenty-seconds, the odour emanating from it was entirely subdued : I afterwards noticed a yellow deposit at the bottom of the vessel very much like sulphur in appearance,—in all probability, the element itself.

"Over a subject that was being dissected, I had the fluid sprinkled in small quantities at intervals of fifteen minutes or thereabouts ; though the putrefactive change in it had already commenced, there was scarcely any disagreeable odour present.

"The fluid sprinkled on the floor of the room about two or three times in the day sufficed to render the air sweet ; this result was noticed by two gentlemen who called at the College to see the collection of specimens in the Museum.

"The fluid is now used in preference to others, as it is more presistent in its effects than Condy's, and is, further, devoid of the sickly odour which arises when the chlorinated lime is employed.

"It has the advantage over all other disinfectants for the purpose of dissection, that it does not injure instruments, or alter the appearance of the tissues. A like preference will, I am certain, be given to it in other dissecting rooms

in this country, and in England also, so soon as it becomes more generally known."

Mr. Gorman, the Resident Apothecary of the Lying-in-Hospital, has used it in certain cases in that Institution, with the happiest effects.

The advantages of this fluid over others in ordinary use appear to me to be the following :

1. It does not discolour or shrivel the skin.

2. As far as I yet know, it neither destroys the colour nor injures the texture of ordinary apparel.

3 It does not colour the furniture or floor on which it falls.

4. It is neither caustic nor poisonous, which cannot be said of other disinfecting fluids.

5. It is, as a deodorizer, by all accounts, more permanent in its effects than any other.

The uses that the fluid may be put to, are indeed numerous, a few of which may be mentioned here.

Privies or closets, with the vessels used in them, may be deodorized on the instant, as well as sewers, drains, stables and other unwholesome localities.

It will, I hardly doubt, (from what we know of Disinfectants, Antiseptics, or Deodorizers) hereafter become indispensable in the Dissecting Room both of College and Hospital: in the wards, in particular during the stay of patients suffering from small-pox, certain other fevers, diarrhœa, cholera and dysentery, it would prove eminently useful.

In cases of fœtid breath, arising from affections of the mouth or throat, it is better, in my opinion than any other remedy, for it is not only fluid and therefore easily converted into a gargle by dilution with water, but it is perfectly innocuous, and does its work in a few moments.

Physical Properties.—For the information of those who may not yet have seen Mr. Norton's Deodorizer, it may be stated to be a colourless fluid, resembling water, with a mild odour very much like that of tar, and a slightly alkaline taste.

Report on Experiments made with a Chemical Fluid for Deodorizing and Disinfecting Drains. By G. Norton, Late Assistant to the Professor of Chemistry, Madras Medical College.

As directed by the Municipal Commissioners, in their proceedings, dated 17th April last, I, in conjunction with the Civil Engineer of the Municipal Board, and with the assistance of some individuals under his orders, carried out the experiment with the *Chemical fluid* for deodorizing the drains, brought to the notice of the Board in my letter of the 15th idem. Ninety-five gallons of the fluid were prepared by me a few days after I received the orders of the Board, but, owing to the unavoidable delay in the Engineers' department in getting the apparatus ready for applying the fluid, the experiment on the drain in *Oodacall street,* which passes through the heart of Black Town, and empties itself into the sea about the middle of the North Beach, did not commence until Friday the 6th of June.

The apparatus consisted of two of the iron cylinders or cans in which oil is now exported from England, each of six gallons capacity, having an exit metallic flexible pipe soldered to one side close to the bottom. The pipe terminated in a closed funnel-shaped extremity made of sheet zinc, which was pierced with two minute holes, to allow the discharge of about a gallon per hour. A spare or third cylinder of similar construction was in readiness to supply the place of its fellows, in case of accident.

The cylinders were placed, one at the point of junction of three branch drains that led into the main sewers ; the other at the distance of about forty or fifty feet from the mouth or outlet of the sewer.

On the morning of the day above mentioned, Mr. Horgan, the Civil Engineer, and his overseer, met me at the beach ; we filled the iron cylinders with the chemical fluid, which passed in two slender jets into the current of sewerage fluid, intimately mixing with it, as it travelled onwards to the mouth of the drain.

Some slight diminution in the offensive smell was speedily noticed by those present. Directions were given to the under-subordinates of the Municipal Commission to fill the cylinder placed at the point of junction of the drains with

fluid twice a day, morning and in the afternoon, to allow twelve gallons of the deodorizer to enter per diem, and two or three gallons into the cylinder situated close to the mouth of the drain, to be discharged about half or one hour before the slide is opened to let out the contents of the drain into the sea.

The overseer, without orders from his superior, the Engineer, stopped the experiment in the afternoon of the day following (Saturday), assigning as his reason for so doing when questioned about it, that it rained that evening. This partial interruption was discovered by me on Monday morning when I visited the drain, to ascertain the result of the trial. The scavengers, whose occupation it is to open and close the drain informed me on inquiry, that since the application of the fluid, the offensive smell was day by day becoming less. I reported the result of my visit to Mr. Horgan, who immediately ordered the overseer to set the experiment going again, and not to stop it until ordered. This was done at 2 P. M. of that day. From that time the fluid continued to be passed into the drain until Friday the 13th, fully one week from the time of the commencement of the expriment, by which time all the deodorizing fluid that had been prepared was expended.

I have continued since Monday to visit the scene of the experiment morning and evening, not liking to trust too much to native care. Every day the workmen engaged at the drain, and the people who live in the vicinity, have informed me that the nuisance from the drain has been kept in check. Others who were unaware that the experiment was being tried stated, that they had not for some days noticed the offensive smell from the drain when passing by, but did not know to what cause to ascribe its absence. I lifted the wooden shutters that overlie the openings into the drain to ascertain if a stench arose from it, but there was no disagreeable odour. Any one could now stand close by, even when the wooden shutters were open, without the sickly feeling which drove people from the place before the experiment was commenced. The workmen employed to keep the drain clean assured me that when the drain is now opened to discharge its contents into the sea, there is no bad odour, although the smell was previously intolerable

The engineer and overseer were present on Thursday the 12th at 2 o'clock to witness the experiment, when the

slide was lifted, and the contents of the drain discharged. The overseer informed me that no offensive odour arose at the time, at least none that he could perceive. Mr. Horgan seemed to be favourably impressed with the result of the experiment, but wished, before he submitted his report to the Municipal Board, to prolong the experiment for a few days, and with this view asked me to prepare some fluid, which I promised to do.

On the morning of the 14th (Saturday), I visited the sewer quite early when it was full of fluid, the accumulation of the previous 24 hours. I ordered the wooden shutters that lie across the openings into the sewer to be lifted. A puff of heated air escaped, but there was no effluvium, though the sewerage was stagnant with a slimy layer on its surface.

The conicopoly or sub-overseer present mentioned, that the drain was purposely kept closed until I came, in order, that when opened, I might observe the change produced since the experiment was commenced. When the slide was lifted in my presence, the dark muddy fluid ran into the sea. Puffs of heated air also escaped, but there was no bad odour. All present, the sub-overseer, the scavenger, and several by-standers who were looking on from curiosity, remarked that there was no effluvium; whereas at the opening of the drain before the experiment began, the sub-overseer and others mentioned, that no one could bear to stand by. The sub-overseer and myself were purposely standing on the leeside of the drain, so that the wind might direct the stench, if any, towards us. I sent further to enquire of some boatmen if they noticed any bad smell, as they were close to the stream of the sewerage that was passing into the sea. Their answer was, (for they were ignorant of the experiment), that for some days past no stink arose from the drain, but they could not explain why, as it had always hitherto been offensive.

The experiment has been successful on the whole. It has removed the bad smell arising from a very offensive drain, (which discharges about 200 cubic feet of sewerage fluid, from the houses of a large portion of the town, daily into the sea,) and rendered it inoffensive. Prior to the experiment this drain was a frequent cause of complaint by the merchants and others transacting business on the North Beach, and had even called forth the indignant remon-

strances of the Judges of the Supreme Court. Its present inoffensive state may, therefore, be a matter of congratulation.

The chemical fluid is not only a safe, speedy, and efficacious deodorizer, it is also disinfectant, and possesses antiseptic properties to a certain degree. For experiments made with it prove that after destroying, by virtue of its chemical agency all offensive odours, whether arising from gaseous or fluid matters, it prevents or arrests further putrefaction. It may therefore be safely and usefully employed to purify the air of apartments, particularly of sick chambers and hospitals, of stables, poultry yards, necessaries, and heaps of compost or other matters undergoing decomposition. The black offensive debris removed from the floor of the main sewers annually is rendered innocuous by it almost instantaneously. The chemical fluid may further be usefully applied on board of vessels conveying troops, where it will be found extremely economical for deodorizing bilge water and purifying the air between decks. Further, I am of opinion, (though my experiments have not been turned to this direction yet) that it will answer admirably for the preservation of timber, and also for preserving some kinds of anatomical preparations.

The advantages of the fluid are that—

It has a pleasant and fragrant odour.

It is devoid of any poisonous or injurious ingredient, and therefore may be handled and used with impunity.

It does not soil nor decolorise clothes, matting, carpets, &c., with which it may come in contact.

It not only deodorizes but disinfects, and arrests decomposition. It is therefore antiseptic also.

It is the CHEAPEST fluid of its kind.

The cost of the fluid might be reduced further if its preparation be undertaken on a large scale. By this means it will be accessible to the poorest of the population.

The use of the fluid (which should be encouraged) in private dwelling houses closely aggregated, by the addition of a few ounces daily to the drains in the houses, will make the air of the town sweet.

No. 6.—*Quarterly Report on the Mortality of Madras, for the months of January, February and March* 1863. By W. R. Cornish, Assistant Surgeon, Secretary to the Principal Inspector General, Medical Department.

The Annual Report on the causes of death, being frequently delayed on account of the labor involved in the preparation of numerous tables and the difficulty in getting them correctly printed, I have deemed it advisable with the commencement of a new year, to submit a quarterly summary of the more noticeble facts with regard to public health, in order that Government and the public may be correctly informed of the sanitary condition of the Town, and that measures of improvement may be at once considered when such appear to be necessary. The detailed information as to the recorded causes of death, will, as heretofore, be given in the Annual Report.

2. In the first quarter of 1863, the mortality amongst Europeans, East Indians, and Hindoos has been excessive, when compared with the means of the corresponding quarters of eight preceding years. The deaths amongst Mussulmen appear to have been below the average. The deaths in the quarter were—

From miasmatic diseases.....	2,445	
From all other causes.....	1,338	
		3,783
and the average of the corresponding quarters for 8 years—Miasmatic diseases.....	1,698·5	
Other diseases.....	1,207·5	
		2,906
Excess in 1863 over the mean of 8 years.....		877

3. The increase of mortality has been due chiefly to the greater prevalence of miasmatic diseases and especially cholera, which, for the last two years, has been raging to a great extent in the Black Town District. In the three months ending 31st March, cholera proved fatal to 1,279 persons. At the end of the quarter it was decreasing slowly, and since the south winds have steadily set in as in former years, the prevalence of the epidemic has much diminished. The seasons have not been unusual, and I cannot satisfy myself

that the progress of the pestilence has been at all influenced by the weather or temperature. In truth, the fact of the disease being confined almost exclusively to crowded and densely inhabited parts, especially in Black Town, seems to show that the causes of its persistence amongst us, are to be looked for elsewhere than in the changes of weather or condition of the atmosphere.

4. The European inhabitants have suffered more than usual from cholera in the past quarter; out of a total of *fifty-nine* deaths, *twenty-eight* resulted from cholera. The disease attacked the detachment of Troops in the Fort which had recently arrived from Wellington, and the Officer Commanding the Regiment with several of the men fell victims to it. European Sailors, Pensioners and others of that class, residing in Black Town, were the chief sufferers. The sanitary condition of this District has been most deplorable for some time past, and the drainage and conservancy within the Fort were defective at the time of the outbreak there. The subject of improving the latter is now under the consideration of the Military authorities.

5. I have noticed in former reports that Madras is getting more and more unhealthy year by year. The Tables for 1862, which have just been completed, and are now nearly ready to send to press, show that the mortality of that year was higher than in any similar period since the deaths have been registered. The total deaths were 14,733, and the excess was due in great measure to the prevalence of cholera, from which disease the total number of deaths were 3,633. Reckoning the population of Madras at 450,000, in accordance with the result of the recent census, the death rate for that year was 32·74 per thousand, or a rate which is very much higher than it ought to be, on a generally healthy coast like that of the east of the Indian Peninsula. In the new and rising town of Cocanada, on the same coast the ratio of mortality during the same period was scarcely *one-half* that of Madras. The first quarter of 1863 shows no improvement as to the excessive mortality in Madras, and I much fear there will be no important change, until measures are taken to remedy the deficient water supply and to dispose of the sewage and filth, in a less objectionable manner than at present.

6. The following Table will show the particulars regarding the most important of the Miasmatic diseases during the

Deaths in Madras.

First Quarter of 1863.

	European.		East Indian.		Hindoos.		Mahommedans.		Total.		General total of both sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Miasmatic Diseases.											
Small Pox	...	...	...	...	12	16	1	4	13	20	33
Measles	...	...	2	...	1	3	...	...	3	3	6
Fevers	1	...	1	2	279	193	22	26	303	221	524
Dysentery	3	2	1	2	140	144	21	25	165	173	338
Diarrhœa	1	3	4	3	132	100	6	16	143	122	265
Cholera	25	3	17	14	593	528	48	51	683	596	1,279
Total of Miasmatic diseases.	30	8	25	21	1,157	984	98	122	1,310	1,135	2,445
Total of all other diseases...	13	8	17	20	541	521	120	98	691	647	1,338
Total.....	43	16	42	41	1,698	1,505	218	220	2,001	1,782	3,783
Mean. of eight first quarters from 1855 to 1862.											
Miasmatic diseases	10·3	2·2	15·	15·15	720·	650·3	136·2	148·7	881·6	816·8	1,698·5
Other diseases	15·5	4·5	16·3	16·6	514·6	472·3	82·3	83·1	628·8	578·6	1,207·5
	25·8	6·7	31·3	33·75	1,234·6	1,122·6	218·5	231·8	1,510·4	1,395·5	2906·
Increase or Decrease in 1863.											
Increase	26·5		7·95		845·8		.....		.....		877·96
Decrease	.....		.....		.....		12·3		.....		

quarter. It will be observed that small-pox and measles have not been very prevalent during the period.

No. 7.—*Quarterly Report on the Mortality of Madras, for the months of April, May, and June* 1863. By W. R. CORNISH, Assistant Surgeon, Secretary to the Principal Inspector General, Medical Demartment.

THE second quarter of the Calendar year, so far as recorded experience allows of an opinion being given, is generally marked by a low death-rate from cholera, and a diminished mortality from some other diseases of the Miasmatic class. Though the aggregate deaths in all classes of the community are in excess of the mean average of the corresponding quarters in eight preceding years by 500, it is satisfactory to be able to report a considerable decrease as compared with the Returns for the first three months of the present year.

2. The total registered deaths in the two quarters are as follows—

	1863.	
	1st Quarter.	*2nd Quarter.*
Europeans	59	32
East Indians	83	83
Hindoos	3,203	2,349
Mussulmans	438	485
	3,783	2,949

Decrease in second Quarter... 834.

3. The most marked decrease of mortality has been amongst the European community, and is partly accounted for, perhaps, by the migration of many families to the Hills; but the fluctuations from this cause do not entirely account for the lessened death-rate. It is due in a great measure to the better health, and absence of epidemics from the community during the hot dry months of the year. There were only three deaths from cholera in the second quarter, against twenty-eight in the first.

4. The total deaths of East Indians in the second quarter is, curiously enough, exactly the same as in the first, though the diseases causing death were very different. Thirty-one causalties by Cholera in the first quarter, and only

two in the second. In the latter period fevers, diarrhœa, dysentery and small-pox, caused twenty-seven deaths.

5. Amongst the Hindoos, Native Christians and Pariahs, there has been a large decrease in mortality, chiefly owing to the cessation of the cholera epidemic, which, by the end of June, had almost entirely disappeared from the town and neighbourhood. Madras was, in the beginning of July, freer from cholera than it has been at any time since June 1860.

6. The deaths of the Mussulmans were slightly in excess of the number occurring in the first quarter.

7. The season has, on the whole, been favorable to health. Heavy rain occurred in April, which kept the wells and tanks from running low during the subsequent hot weather. The south-winds blew strongly, and the monsoon setting in early on the Western Coast, caused the land-winds to blow with considerable force. Although the temperature of the air in May and June was very high, it was actively in motion, and this perhaps is no unimportant matter in warding off the invasion of epidemic diseases.

8. As regards the mean death-rate of the eight previous second quarters, it will be observed that, in most classes there has been an excess of mortality in 1863. This fact will be plainest in a Tabular form including the deaths of both sexes.

	1863. *2nd Quarter.*		*Mean of* 8 *similar periods.*
Europeans	32	.....	32·1
East Indians	83	.....	68·9
Hindoos	2,349	.....	2041·1
Mussulmans	485	.....	306·7
	2,949		2448·8

9. The conclusion to be drawn from these figures is simply that the deaths, though less numerous than in the first quarter, are much in excess of what they should be in the healthiest months of the year.

10. The population may be increasing yearly so as to account for a larger number of deaths, but of this there is no positive evidence. It is possible too that the true mean is rather higher than the actual figures denote, as the registration was not carefully looked after during the first three

years of the period to which it refers, and many deaths may have escaped notice.

DEATHS IN MADRAS.

Second Quarter of 1863.

	Europeans.		East Indians.		Hindoos.		Mahomedans.		Total.		General total of both sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Miasmatic Diseases.											
Small Pox	...	...	3	1	19	12	5	4	27	17	44
Measles	1	...	...	...	1	...	...	...	2	...	2
Fevers	1	...	3	6	266	225	28	31	298	262	560
Dysentery	1	...	2	3	126	131	23	33	152	167	319
Diarrhœa	...	...	3	6	100	84	6	13	109	103	212
Cholera	2	1	1	1	118	87	27	22	148	109	257
Total of Miasmatic diseases.	5	1	12	17	630	539	89	101	736	658	1394
Total of all other diseases	17	9	28	26	640	540	157	138	842	713	1555
Total	22	10	40	43	1270	1079	246	239	1578	1371	2949
Mean mortality of eight second quarters from 1855, to 1862											
Miasmatic diseases	9·1	2·8	16·	14·5	564·2	519·2	65·7	68·5	655·1	605·1	1260·2
Other diseases	15·2	5·	19·7	18·7	498·	459·7	83·3	89·2	616·3	572·7	1189·1
	24·3	7·8	35·7	33·2	1062·2	978·9	149·	157·7	1271·4	1177·8	2449·3
Increase or Decrease				14·1		307·9		178·3		...	500·2
Increase				...		...		...		...	...
Decrease		1									

Meteorological Results *from the Madras Observatory Register, for the month of April,* 1863.

1863.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometer. Observed Extremes. Maxim.	Observed Extremes. Minim.	Daily Means. Dry.	Daily Means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.		
1st	29·860	89·5	74·2	82·5	75·9	S.	115	.....	Light haze.
2nd	·813	92·7	75·8	83·4	76·9	S.	156	.....	Fine day—hazy night.
3rd	·746	92·0	75·8	83·8	77·5	S.	178	.....	Hazy.
4th	·710	91·6	78·0	84·7	78·3	S. S. W.	193	.....	Hazy—cloudy for some hours.
5th	·751	92·2	78·8	84·6	78·4	S.	193	.....	Light haze.
6th	·752	93·7	79·0	85·9	78·4	S. by W.	204	.....	Fine: cloudy about sunset.
7th	·737	97·2	79·2	85·7	79·6	S. S. W.	196	.....	Hazy.
8th	·757	94·9	79·7	86·1	79·8	S.	208	.....	Fine.
9th	·833	92·4	79·8	85·1	79·1	S.	178	.....	Do.
10th	·862	92·0	78·2	84·7	78·0	S. S. E.	124	.....	Do.
11th	·829	91·2	75·8	84·1	77·8	S. S. E.	118	.....	Do.
12th	·794	91·3	76·4	84·8	77·7	S. E. by S.	137	.....	Fine, with passing clouds.
13th	·768	92·7	77·6	85·5	78·2	S. E.	151	.....	Fine.
14th	·789	92·9	78·4	85·9	79·1	S. E. by S.	140	.....	Fine, with flying clouds.
15th	·816	92·6	78·8	85·5	78·8	E. S. E.	60	.....	Passing clouds.
16th	·810	91·8	80·6	84·7	78·1	E. S. E.	96	.....	Frequently clouded. A few raindrops. Lightning.
17th	·805	91·6	79·2	85·5	78·1	S. E.	79	.....	Occasionally clouded.
18th	·788	92·8	77·8	85·7	78·9	E. S E.	51	.....	Heavy passing clouds.
19th	·774	91·6	80·4	85·8	78·7	E. by S.	76	.....	Heavy clouds. Lightning. A few raindrops.
20th	·792	90·4	78·8	83·3	77·4	E. by S.	68	0·20	Cloudy. Rain at 6¾ A. M.
21st	·814	82·8	65·6	77·3	75·5	E. S. E.	65	1·71	Overcast. Steady rain after 6 A. M.
22nd	.830	83·4	74·8	78·1	76·4	S. S. E.	78	0·60	Overcast and rainy.
23rd	·840	87·2	75·4	80·7	77·5	S. S. E.	86	0·41	Frequently overcast, and showery.
24th	·823	87·3	76·0	78·3	75·9	S. S. E.	114	2·10	Chiefly overcast. A thunder-storm from West, between 7 and 8 P. M.
25th	·779	90·9	73·8	79·7	76·8	S. S. W.	94	0·03	Cloudy. Light showers.
26th	·780	91·4	76·4	84·4	77·8	S.	99	.....	Light clouds.
27th	·764	94·3	79·1	85·6	80·7	S. by E.	103	.....	Chiefly fine.
28th	·777	97.1	79·7	84·8	79·2	S.	117	.....	Fine, with passing clouds.
29th	·753	97·1	78·0	86·6	80·4	S. by W.	135	.....	Flying clouds before sunrise. Fine day.
30th	·745	99·2	81·0	87·8	80·3	S. by W.	156	.....	Do. do.

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METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of May,* 1863.

1863.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxim.	Standard Thermometer. Observed Extremes. Minim.	Standard Thermometer. Daily Means. Dry.	Standard Thermometer. Daily Means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Inches.						Mls.	Ins.	
1st	29·747	98·8	81·7	88·5	80·4	S. by W.	143	.....	Light haze.
2nd	·758	94·8	81·4	87·0	81·5	S.	163	.....	Fine.
3rd	·741	97·0	80·8	86·9	80·4	S.	151	.....	Do.
4th	·752	95·7	79·6	86·8	79·4	S.	217	.....	Do.
5th	·735	94·0	79·6	87·3	79·9	S. by E.	206	.....	Do.
6th	·730	94·9	79·8	86·5	80·2	S. by E.	230	.....	Do.
7th	·758	94·9	80 4	86·6	80·4	S. by E.	214	.....	Do.
8th	·698	96·6	81·4	88.2	80·4	S.	199	.....	Hazy.
9th	·698	98·6	80·6	88·2	79·0	S.	173	.....	Fine before, cloudy after, sunset.
10th	·703	95·1	82·0	88·2	80·2	S. by E.	183	.....	Day fine—night partially clouded.
11th	·696	93·1	81·5	87·3	80·4	S. S. E.	164	.....	Hazy and cloudy.
12th	·690	92·7	82·3	87·4	82·1	S. E	118	.....	Do.
13th	·694	94·8	80·8	86·2	79·3	E. S. E.	75	.....	Chiefly overcast.
14th	·705	92·6	79·8	86·3	79·3	E. by S.	71	.....	Overcast.
15th	·710	93·3	81·7	85·3	79·9	E. N. E.	77	.....	Passing clouds: rain drops after sunset.
16th	·712	92·6	81·4	86·1	80·1	S.E. by E.	72	0·12	Rain before sunrise: partially fine day.
17th	·680	93·8	80·4	87·5	79·4	S. E.	134	.....	Light hazy clouds.
18th	·652	94·8	81·1	87·8	81·0	S. S. E.	168	.....	Cloudy and hazy.
19th	·681	95·9	81·6	87·3	78·8	S.	160	.....	Frequently clouded.
20th	·690	98·8	81·0	87·3	78·0	S. S. W.	181	.....	Hazy clouds.
21st	·709	99·9	81·8	88·4	78·2	S. S. W.	195	.....	Do. but lighter.
22nd	·739	95·6	80·1	86·7	78·1	S.	180	.....	Cloudy.
23rd	·738	99·7	80·6	87·5	76·9	S. S. W.	163	.....	Passing clouds.
24th	·752	97·3	81·3	88·1	77·0	S. S. W.	147	.....	Light clouds.
25th	·775	96·4	80·0	88·4	78·7	S.	145	.....	Do.
26th	·773	99·1	80·5	86·3	76·6	S. S. W.	136	.....	Passing clouds.
27th	·736	101·8	79·8	88·4	77·3	S.W. by S.	159	.....	Do.
28th	·707	101·0	80·8	89·5	78·1	S. by W.	163	.....	Chiefly fine.
29th	·691	101·3	81·8	89·5	79·1	S.	178	.....	Fine with occasional clouds.
30th	·664	100·2	82·6	91·4	77·1	S.	175	.....	Hazy clouds.
31st	·632	101·8	84·9	89·5	77·2	S. S. W.	201	.....	Chiefly overcast.

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METEOROLOGIACL RESULTS *from the Madras Observatory Register, for the month of June,* 1863.

1863.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometer. Observed Extremes. Maxim.	Observed Extremes. Minim.	Daily means. Dry.	Daily means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·631	102·4	81·6	89·1	78·8	S. W.	162	.....	Light clouds.
2nd	·654	95·9	81·4	88·7	78·5	S. by W.	179	.....	Do.
3rd	·630	98·4	80·5	88·2	78·8	S.	194	.....	Hazy.
4th	·662	101·7	82·6	91·1	77·6	S.W.byS.	166	.....	Passing clouds.
5th	·695	103·4	82·4	90·0	77·3	S. S. W.	208	.....	Fine morning : cloudy afternoon.
6th	·711	98·6	84·6	88·1	77·2	S. S. W.	171	.....	Chiefly overcast.
7th	·723	96·8	82·0	87·9	76·0	S.W.byS.	188	.....	Overcast.
8th	·742	95·7	79·0	84·6	76·5	S. S. W.	130	0·12	Overcast. Rain before 2½ A. M.
9th	·759	96·8	79·6	85·9	77·5	S. S. W.	132	.....	Cloudy after sunrise.
10th	·756	98·6	80·4	87·7	78·2	S. by W.	148	.....	A few passing clouds.
11th	·728	101·3	79·7	88·1	78·3	S. S. W.	146	.....	Cloudy all day. [2¼ to 6 A. M.
12th	·718	94·7	78·1	85·1	78·6	W. S. W.	138	0·15	Chiefly overcast. Slow rain from
13th	·734	97·8	80·8	86·2	76·0	S. S. W.	129	0·12	{ Chiefly overcast. Showers at 4¼ and 7¼ P. M.
14th	·710	97·6	79·6	87·1	76·1	W. S. W.	151	0·07	Heavy clouds. Shewer about 5 P.M.
15th	·677	92·8	78·8	84·6	75·5	S. W	144	.....	Overcast.
16th	·729	86·3	77·6	80·3	73·9	W. S. W.	108	0·12	Do.
17th	·694	95·4	76·8	85·3	75·6	S. W.	153	.....	Do.
18th	·680	96·5	79·6	88·6	74·3	S. W.	178	.....	Frequently overcast.
19th	·678	96·5	82·4	89·9	73·6	W. S. W.	216	.....	Overcast.
20th	·667	94·5	83·4	88·9	74·2	S.WbyW.	223	.....	Do.
21st	·652	97·6	81·4	90·0	73·6	S.W.byS.	197	.....	Cloudy.
22nd	·678	99·8	82·4	89·1	75·6	S. W.	202	.....	Cloudy : Lightning.
23rd	·714	100·6	82·1	87·8	75·9	S. W.	174	.....	Do. do. [at 8¾ P. M.
24th	·736	98·6	83·3	85·6	76·4	S. W.	202	0·30	Chiefly overcast. Thunder storm
25th	·699	100·4	77·8	87·1	75·7	S. S. W.	171	0·18	{ Chiefly overcast. Thunder shower at 8 P. M.
26th	·679	95·2	79·6	88·2	73·8	W. S. W.	200	.....	Cloudy. Lunar halo.
27th	·646	97·8	81·7	88·1	74·1	S WbyW.	194	0·00	Overcast, with light showers.
28th	·656	98·7	81·4	86·4	76·9	S. S. W.	182	0·00	Cloudy and showery.
29th	·680	100·0	80·6	86·3	76·9	S. S. W.	185	0·01	Frequently clouded.
30th	·692	100·6	81·9	87·5	76·9	S.W.byS.	194	.....	Do. do.

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PART IV.

MEDICAL INTELLIGENCE.

The Madras Medical College.

THE Annual Meeting for the distribution of Prizes to the Students of the Medical College was held on Tuesday evening the 26th of May. There were present H. E. the Governor, H. E. the Commander-in-Chief, the Principal Inspector General Medical Department, the Hon'ble Mr. Pelly, the Hon'ble Mr. Arbuthnot, E. B. Powell, Esq. Director of Public Instruction, Col. McGoun, Col. Barrow, Drs. McKenna and Shaw, Deputy Inspectors General of Hospitals, Surgeon Major Gordon, H. M.'s 69th Foot, Col. Primrose, Col. Cooke, Capt. McLeod, Assist. Surgeon Mason, Dr. Thompson, Dr. Paterson, the Rev. F. G. Lugard, the Rev. J. Bilderbeck, Col. Dobbie, Dr. Walter, Capt. Mitchell, Major Lawder, Dr. Duff, Dr. Hunter, Dr. Mudge, Dr. Wyndowe, Major Gillilan, Col. Simpson, Col. Macdonald, Mr. Cornish, Col. Hamilton, Major General McCleverty, Dr. VanSomeren, Dr. Mair, the Rev. W. Hickey, the Hon'ble Mr. Campbell, Native Surgeon Jesudasen, Messrs. Huffton, Barrow, Stirling, Groves, Kinsley, Turnbull, &c., Deputy Inspector General Mayer, Principal of the College, and Professors Blacklock, Montgomery, Chipperfield, Urquhart, Smith and Paul.

The Principal of the College, Dr. MAYER, read

THE ANNUAL REPORT—SESSION 1862-63.

The Session which has just been brought to a close, commenced on the 1st September 1862 and ended on the 30th ultimo. During the period which is included between the dates specified, several changes of more or less import and interest to the College have occurred. Of these, the first that claims notice, is the absence from duty of Mr. Shaw on account of severe sickness, from the 7th October, to the 10th December 1862, Mr. Mayer officiating for him as Principal, Dr. Paul instructing both his classes. On the 7th October, which is the same date as that on which Mr. Shaw proceeded on sick leave, Dr. Urquhart was re-appointed to the chair of Medical Jurisprudence, but as there were no students in the College sufficiently advanced he had no opportunity of lecturing.

On the 1st of March 1863, Mr. Mayer having been promoted to the rank of Deputy Inspector General of Hospitals, his connection

with the College would have ceased, had it not been found necessary to retain him until his services as Profesor of Chemistry and Chemical Examiner could be taken up by some other qualified Medical Officer.

On the date last mentioned, Mr. Shaw having also been promoted to the rank of acting Deputy Inspector General of Hospitals and appointed to the Southern Divison, his connection with the College ceased—a connection that had existed uninterruptedly for 22 years. Any lengthened statement of Mr. Shaw's past, long continued and valuable services to the College, however agreeable to the feelings of an old friend and colleague, would here be no less out of place than superfluous. The numerous pupils who can point to him as their sole instructor in Surgery, Midwifery and Diseases of the Eye—the large circle of friends gained by his professional skill and courteous demeanour, the value attached to his opinion by his professional brethren, bespeak the character of the man, and, at the same time, show how well that character has been earned.

Consequent on Mr. Shaw's promotion to the grade of Deputy Inspector General of Hospitals, Government were pleased to appoint the senior Medical Officer, still attached to the College, Mr. Mayer, to be Principal, and Dr. G. Smith to be Professor of Midwifery and Diseases of the Eye.

The Assistant to the Professor of Chemistry, Mr. Norton, having for some time past suffered from failing health, he felt himself at length obliged to apply for his pension, he was accordingly pensioned, and Mr. Harvey appointed in his room, of whom it is but justice to state publicly, that he owes his present position entirely to his superior qualifications and knowledge gained, I am proud to add, wholly at this College. Of Mr. Norton it is no less just to record publicly the sense entertained of his knowledge in Chemistry, and of his continued and useful exertions as Assistant to myself and to my predecessor, Mr. Key. This post he held for 17 years and, during the whole term, never once forfeited the esteem and good-will of either Professor or pupil.

The death of the Clerk and Librarian, Mr. Jobard, who was a good and zealous servant of the College (which occurred from Cholera on the 21st November 1862) necessitated the appointment of some one in his room. Mr. Shaw, the then Principal, selected N. Ramanathen Pillay to fill the situation of Clerk, and P. R. Narrainasawmy Moodeliar that of Librarian.

The Students, at College, continue to be divided into three departments.

Senior Department, which has during the past Session consisted of—

Private Students	2
Lane Scholar	1
Government Scholars	4

Second Department usually consisted of three classes, 1st, 2nd and 3rd. During the past Session, however, there have been but two classes, the first consisted of eight, which is now about to leave College, and the third consists of nineteen; the absence of the 2nd class depends on the not having taken in the usual number of boys in the year 1861. The entertainment of twenty students only having been provided for, there will during the next session, be only two classes, viz., 2nd and 3rd. This department qualifies for the grade of Assistant Apothecary.

* 1st Class.....	24
2nd do	29
3rd do	42

The *Junior Department* consists of three classes* also, and qualifies for the grade of Hospital Assistant.

The conduct of the students in the various classes has been, on the whole, good.

I will defer any remarks on the intelligence and progress of the students until I have read those of the different Professors and Government Examiners.

Class of Anatomy.—The Professor of Anatomy says: "The class is composed of lads who are very unequal in both general intelligence and aptitude for study. Those, who at the close of the Session were found to occupy positions in the upper half of the class, possess ability equal to the average of that of lads of their station in life, but there are others who have not apparently enjoyed such advantages of education and who are not naturally so gifted as their compeers, who speedily assumed, and have never been able to rise from, the lower places in the class."

Class of Medicine.—The Professor of Medicine says: "Respectable mediocrity is about as much as can be expected from young men who have entered on Medical studies not from choice but from necessity, and who have no inducements to make them desire more knowledge than is just sufficient to enable them to keep themselves in the service;" and he goes on to say, "that important changes are required in reference to the Subordinate Medical Service, of which the chief is an education that would hold out ulterior prospects to the student after his ten years' engagement with Government has expired."

Class of Surgery.—The Professor of Surgery says: "The conduct of the students in the Senior Department has been, on the whole, exemplary, but I do not consider their progress commensurate with the opportunities they have enjoyed and with the time that has been bestowed in imparting to them a knowledge of Surgery.

"With regard to the Junior Department I must not omit the present opportunity of bearing testimony to the assiduity and zeal of Mr. Wood's tuition. The youths in this Department have the opportunity of attending the Clinical class, along with the Senior Department, but I cannot report that they are either desirous of acquiring knowledge, or of profiting by the means adopted for im-

parting information to them. They desire to learn no more than is necessary, and are imbued with the impression that they are intended by the Government as Vaccinators only, and that therefore their being taught the different branches of Medicine is an imposition on them by their teachers."

Class of Midwifery.—The Professor of Midwifery says: "The general intelligence and industry of the pupils appear to me to be, upon the whole, very moderate, a few of the names at the top of the list have average abilities, and must have been industrious during the Session, the remainder are lads of imperfect education and small capacity and are probably deficient in industry."

Class of Ophthalmic Medicine and Surgery.—The Professor, Dr. Smith, states: "My means of judging of the general intelligence and industry of the pupils have been limited, a few of the lads are both intelligent and industrious, several of the others are apparently deficient either in intelligence or industry."

Class of Materia Medica.—The Professor of Materia Medica says: "The Military Students (19 in number) came to College without any preliminary professional training whatever, except in four instances, and the disadvantage under which they then labored rendered their progress at first exceedingly slow. Feeling the importance of their overcoming the obstacle to their advancement, I delivered thirty lectures extra to the usual number of three in each week, and by this means and by their diligence they managed, with a few exceptions, to acquire a good theoretical knowledge of the nature and properties of all drugs in common use. But one branch of their education still remains incomplete, I allude to Practical Pharmacy. It was utterly impossible that they could have carried out any thing like a successful course of study in this Department during the past Session."

Class of Chemistry.—The Professor of Chemistry says: "That by dint of sheer hard work as shewn by 148 lectures, including 13 registered examinations, aided by constant questioning, explanation, demonstration and the practical performance of most of the experiments by the students, the class has been able (with some few exceptions) to pass the tests prescribed;" but he adds, "a very different result would unquestionably have been obtained had not insuperable difficulties stood in the way," which he explains thus: "Of these, the primary one is the want of such preliminary education as would permit of their receiving abstract ideas or of employing inductive reasoning (even in the simplest cases) in reference to the facts and conditions offered to their consideration;" he adds, "chemistry, and more or less every branch of professional knowledge, demands the exercise of these faculties," and then asks, "with such demands on their mental powers, what can be expected of young lads unacquainted with any form of mathematical demonstration

with only rudimental arithmetic, and with no Latin or Greek which are the keys to the meaning of almost every scientific term;" he goes on to shew "how, without this knowledge and without previous attendance at hospitals, the greater part of the first Session is lost in acquiring the new languages to which the pupils have been so suddenly introduced, and that the loss of this special knowledge (which they ought to have acquired in the first Session) obstructs their progress through all succeeding ones." After noticing the extraordinary pains required of the teacher to overcome in any degree the difficulties he has to contend with, he concludes this part of his report thus—"but it may fairly be asked is not such a state of things deeply to be lamented and deprecated? and were but the lads better trained and educated, would not far greater results, with no greater expenditure of time and labour, be attained?"

Extract from the Report of the Government Committee for the Final Examination of Candidates for the Public Service.

"Bearing in mind the age and class, and reduced term of study of the students of the Senior class of the Second Department, while the Committee acknowledge that their attainments have, on the whole, been generally creditable, they feel them to be lower than in former years, and to constitute too low a qualification for the responsible duties which these young men may soon be called upon to perform. The Committee cannot but connect this deterioration with the reduction of the curriculum from four to three years, and with the fact that the small pay and poor prospects of the Subordinate Medical Department, as contrasted with the pay and prospects of other Departments of the Public Service, are inadequate to attract a sufficient number of youths of ability and promise into its ranks."

From the foregoing extracts, it will be distinctly seen that the Government Examiners and Professors one and all report unfavourably of the intelligence and want of general education of the students, European, East Indian and Native, qualifying for the subordinate branch of the Medical Service. No one, indeed, who has had an opportunity of observing, will deny that the lads who now enter College are decidedly of an inferior stamp to those who preceded them some years since. The reasons of this falling off are undoubtedly those noticed in the report of the Government Examiners. The reduction of the curriculum appears to me to have operated unfavourably in more ways than one. It has evidently shaken the confidence of parents and others on whom may fall the duty of selecting a walk in life for their children or young friends and relations, because they do not now feel that certainty of a complete professional education which they formerly did. The influence of such a feeling and its tendency to keep away from the College the better educated and more intelligent lads, *i. e.*, the sons of the wealthier and more

respectable inhabitants of Madras, is sufficiently obvious, but there is another point of view from which this subject may be considered, viz., that the young men sent out of the College as Assistant Apothecaries are at all times liable to be placed in charge of Detachments, even of whole Regiments, small Stations, Ships, Jails, &c. The question then naturally presents itself, can the gain or saving effected by the reduction of the curriculum be fairly set against the loss of efficiency involved by it, on which may depend the lives of valuable and efficient servants of the State as well as of those nearest and dearest to them? I must however leave this question to authority, having, I venture to hope, done nothing more than my duty in placing it honestly and fairly before that tribunal. I will only add as a significant commentary that while the curriculum here has been cut down by twelve months, they are in England generally increasing it by that very term, even from four to five years. There is one point more that I shall allude to altho' with great diffidence, as it is beset with acknowleged difficulty. I would most respectfully suggest the advisability of some amended arrangement by which efficiency when attained may not be less valuable to the possessor than it is found to be in the Public Works, Railways and other Departments;—delicate as any reference to this point may be, I have not shrunk from it because I believe that a part of the truth is ever liable to be misapprehended and is frequently productive of mischief instead of good; and finally it did not seem to my mind that any other remedial means (this being left unspoken and unnoticed) would be of sufficient power to overcome the adverse conditions now existing. In concluding this part of the subject, I would fain hope that I have not been led by the integrity of intention or by the desire to benefit an Institution with which I have been connected so many years, in any degree to overstep the limits prescribed by the "lex non scripta" for a report of this nature.

In the *Senior Department* Messrs. Boalth and Paterson, Private students of the fourth year, have acquitted themselves well, the former has gained the first prize in Medicine, as well as approval and good marks in every branch of study; the latter gained the prize in Ophthalmic Medicine and Surgery, with high approval in Surgery and approval in Midwifery. B. Evers, Lane Scholar, third year in College, is reported on very highly by Dr. Chipperfield for his attainments in Anatomy and Physiology.

Government scholars of the second year are Seethambarum and Chinnapoo; those of the first year are Pursooramen and Gnanamoothoo. The two lads last mentioned are not reported on very favorably by their teachers, but hopes are expressed that they will be more industrious and do better next Session. With reference to Seethambarum, particularly, and Chinnapoo, I have a more pleasing duty to perform; they were reported on in the highest terms by their teachers.

They have gained very good marks in consequence of having acquitted themselves very well both in the oral and written examination. Being second year's scholars, they have not been allowed to compete for prizes, but have each been adjudged a Prize for General Proficiency.

Johnstone Medal.—R. Hollingsworth, third year student, having by his superior industry, attention and intelligence, obtained prizes in Surgery and Midwifery and high approval in Ophthalmic Medicine and Surgery, having also acquitted himself extremely well in all his examinations, oral and written, has become entitled to the Johnstone Gold Medal.

Government Gold Medal.—No student of the Junior Department having come up to the standard required, the Government Gold Medal has been on this occasion withheld.

Annual Class Examinations by the Professors.—With reference to the Annual Class Examinations by the Professors, from having been present at every one of them, I am able to state that all were conducted with the utmost impartiality and with all the strictness that could be desired. Jansen, Hewett, Watts, Downing and Fandlaven, have been ordered to attend the classes of Materia Medica and Chemistry during the coming Session, their progress during the past not having been satisfactory.

The Committee of Professors appointed to examine the Junior Class in English report favorably of the progress made, as shown by the tabular results, which also prove the pains bestowed on the class by their teacher Mr. Watkins.

Final Examination.—In the appendix will be found in extenso the Report of the Committee appointed by authority to examine the Students of the Second and Junior Department for the grade of Assistant Apothecary and Hospital Assistant respectively. Tables are also appended, giving the results of the examinations in the various subjects.

All the students of the second Department have passed, with one exception, Fonseca. This lad is well behaved, and has a fair amount of intelligence, and is likely to make a good Medical subordinate, I therefore respectfully recommend his being permitted to join the Second Class, and to study another Session in the College with a view, at its expiration, to pass for the grade for which he has this year not sufficiently qualified himself. The arrangement, if permitted, will entail no additional expense to the State.

In the Junior Department all have been found qualified.

Wants of the College.—The Professor of Midwifery and Ophthalmic Surgery has sent in detailed statements of all that he considers requisite. These will be found in the Appendix.

The Professor of Botany towards the conclusion of his report, reiterates his suggestions relative to the formation of a Botanic Garden within the College compound which it was proposed to extend round, and regrets that up to this time no attempts have been made to carry his suggestions into execution, although this has received the sanction of Government.

College Assistants.—The College Assistants, Messrs. Wood, Wilkins and Harvey, have throughout the Session conducted their duties in a manner that in no degree detracts from the reputation gained by former exertions. They have in short afforded entire satisfaction to those under whom they have been working. Mr. Watkins has, as I have already mentioned, bestowed great pains on the English Class and has given every satisfaction. The same may be said of the Draughtsman, who indeed has long proved himself a zealous and skilful servant of the College.

Award of Prizes.—The following students are recommended for the Prizes for the Session, having secured the highest places in the register of merit.

In the Senior Department.—Private Student W. H. Boalth, a prize for attainments in Medicine.

Private Student A. M. Paterson, a prize for attainments in Ophthalmic Medicine and Surgery.

Government Scholar C. Chinnapoo, a prize for general proficiency.

Government Scholar Seethambara Pillay, a prize for general proficiency.

In the 2nd Department.—1st Class Student R. Hollingsworth, a prize for attainments in Surgery, and another in Midwifery.

1st Class Student S. Mansfield, a prize for attainments in Clinical Surgery, and another in Clinical Medicine.

3rd Class Student S. M. Tyrrell, a prize for attainments in Materia Medica, and another in Chemistry.

3rd Class Student J. W. Waldegrave, a prize for attainments in Materia Medica, and another in Chemistry.

3rd Class Student E. O. Doyle, a prize for attainments in Anatomy.

In the Junior Department.—1st Class Student M. Paul, a prize for attainments in Surgery, and another in Medicine.

1st Class Student Abdool Kawder, a prize for attainments in Surgery, and another in Medicine.

2nd Class Student M. Cuthervaloo, a prize for attainments in Anatomy, and another in Materia Medica.

2nd Class Student S. Sungevee, a prize for attainments in Anatomy and Materia Medica.

2nd Class Student D. Gnanum, a prize for attainments in Anatomy.

3rd Class Student T. Rajagopaul Moodelly, a prize for attainments in English.

3rd Class Student Cundasawmy Moodelly, a prize for attainments in English.

3rd Class Student Venketsawmy, a prize for attainments in English.

His Excellency the Governor then presented the Prizes and Certificates to the successful students. After which Professor G. Smith, M.D., delivered the following address :—

YOUR EXCELLENCIES,

The duty of delivering the Annual Address has this year devolved upon me.

I have selected a *general* subject, namely, "*Medicine; regarded as an important element in the civilization of India,*" and I have endeavoured so to sketch it, that it may prove interesting to the occupants of these benches, as well as to those gentlemen who have honored us with their presence here this day.

SECTION I.—*General Sketch.*

Medicine; a sketch of its historical development.

Medicine, in its history has been associated with man's mental, moral and physical nature; with his wants, his weakness, his wickedness and his progress. Impinging alike upon his spiritual and physical nature, its development has been an accurate transcript of his whole history; it has equally shared his triumphs, and partaken of his degradation.

The universal recognition by man of an art of healing, rests upon two simple but all powerful principles. The one, the catholicity of sickness, suffering and death; the other, the truth enunciated by Holy Writ, that "no man ever yet hated his own flesh; but nourisheth and cherisheth it."

Instinctive stage.

In the rudest state, when man has only the pleasures of sense and the wants of appetite to gratify; when instinct guides him to the food necessary for his existence, a similar, though less unerring instinct directs him to the employment of those simple agents within his reach, which are fitted to relieve the bodily ailments from which he suffers; and this instinct he shares in common with some of the inferior animals.

But the human mind ever working and active, ever under the influence of the unseen, ever feeling after God, if haply it may find Him, soon begins to associate disease and death with the anger and malignity of mysterious powers; and thus Medicine, as an art, must

have early passed into the hands of those, who were supposed to have power with the world of spirits.

The priest-physician.

The wily priest claiming influence with the Gods and demanding implicit reverence and trust, became the physician of his brother man; the power once gained, was held with an iron grasp, and the caste of the priest-physician became established. The knowledge and power thus secured, were handed down in an unbroken line with jealous care, and gained at each remove a firmer hold of the minds and bodies of men.

Medicine then appeared as an art known to the initiated alone; an art allied with magic, incantations and astrology; dealing in charms, amulets and talismans, it closely reflected the folly and superstition of the times.

Many a dreary valley of degradation the "art of healing" has had to pass through, before it emerged into the light of heaven, as a free, humane and holy science.

Egypt.

In ancient Egypt, the physicians were also priests,—priests of Isis; and if they possessed any knowledge of the structure of the human body, it must have been gained from the opportunities afforded them, in the course of their labours as embalmers. "There are some grounds, however, for suspecting that they were more conversant with Surgery than is generally supposed, for it is said that on the ruined walls of the renowned temples of ancient Thebes, basso-relievos have been found, displaying surgical operations, and instruments not far different from some in use in modern times. Their medical practice founded upon incantation and astrology was sufficiently simple. They divided the body into thirty-six parts, believing in an equal number of demons, to whom those parts were entrusted; and to invoke whose aid in sickness, was the principal duty of the physician; each spirit being called upon to cure his own peculiar portion."*

Esculapius.

Esculapius lived some fifty years before the Trojan War.† His two sons Podalirius and Machaon followed Agamemnon to Troy. When Machaon was wounded by Paris, Homer represents "the whole Army as interested in his recovery;" even the stern Achilles enquires anxiously after "the wounded offspring of the healing God," and the valiant Nestor, to whose care he is entrusted, is exhorted to unwonted exertion on his behalf; "*for a leech who like him, knows how to cut out*

* Vide Professor Miller's Historical notice of Surgery; to which, as well as to Dr. Meryon's History of Medicine (Vol. I.), I am much indebted both for facts and illustrations.

† B. C. 1192.

darts, and relieve the smarting of wounds by soothing unguents, is to armies more in value than many other heroes." A fact just beginning to be appreciated in the 19th century.

Distinguished heroes were advanced to the rank of Gods, and physicians had their fair share in the general apotheosis.

The virtues and powers of the deified physician were supposed to reside in the temple erected to his fame, and to pass, as an inheritence, to his successors. Hence these temples became receptacles for the sick and afflicted, and as each votive tablet hung within their walls detailed the disease and the cure as well as the grateful acknowledgments of the patient, we can understand how a considerable mass of clinical experience—such as it was—must have fallen under the observation of the Asclepiades.

Hippocrates.

The first prominent name connected with the early history of medicine is that of Hippocrates.* His was but one of a phalanx of names great in philosophy, history, and art. Socrates, Plato, Zenophon, Heredotus, Thucydides, Euripides, Sophocles, Phidias and Aristotle were his contemporaries. What Plato is to philosophy, Aristotle to logic and Phidias to the fine arts, Hippocrates is to medicine. No name is more respected among us than that of "the old man of Cos."

Plato, Aristotle.

Plato was a physician, though he abandoned medicine for philosophy, and Aristotle, the mighty Stagyrite, the tutor of Alexander the Great, though not connected with the healing art directly, was the first successful student of comparative Anatomy. He appointed a naturalist to accompany each battalion of Alexander's Army on its eastern expedition—a fact worth remembering—and he systematized the stores of information thus acquired. He divided the animal kingdom into Vertebrata and Invertebrata, and he pointed out more than 2000 years ago the distinguishing characteristics of man, as compared with the Quadrumana; thus correcting, by anticipation, the reveries of sundry philosophers, from a Monboddo down to a Huxley and Darwin.

The philosophic tone of the times in which he lived evidently influenced Hippocrates, for in his writings we find, mingled with the mysticism of Plato, much of the patient observation of Aristotle, and of the inductive reasoning of Socrates; whilst the influence of Hippocrates upon his contemporaries, may possibly be seen in the exquisitely beautiful and almost professional description of the pestilence at Athens, given by the historian Thucydides.

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* 4th century B. C.

Soon after Hippocrates' times, oriental gnosticism affected Medicine, as it did philosophy in general. Astrology, Magic and Mysticism gave the current of human thought a new and a false direction, and removed Medicine from the domain of observation and research, to the more inviting regions of mystery and metaphysics.

Oriental gnosticism.

On the disruption of the great empire of Alexander, learning found a home in Egypt under Ptolemy Soter, and the Alexandrian school of philosophy rose rapidly to fame.

Alexandrian school.

This university was divided into the four faculties of Literature, Mathematics, Astronomy, and Medicine.*

It was in this famous school that Anatomy was first taught from actual dissection of the human body, and to this day, students recal the name of one of those celebrated professors of Anatomy, in the "*torcular Herophili*" of the intracranial sinuses.

In Rome, medicine as a profession never ranked high. The ancient Romans trusted more to auguries, spells and incantations, than to Medicine and Surgery. We are indeed informed that public edicts were issued "discouraging all countenance to the professed exercise of physic, and recommending faith in traditionary prescriptions, and religious rites." "Cato the Censor, for example, managed the sick of his own family, according to the terms of this edict, and gravely wrote down the words of incantation for curing dislocation or fracture."† *The strongest human intellects have in them a tinge of superstition.* Plato acknowledged the power of Astrology and Magic. Had he lived in these days he might have held philosophic converse with the dead, photographed ghosts, or given séances to believers in spirit-rapping. "One of the best and wisest men of his time, Bishop Hall, confessed that old wives and stars were his counsellors, his night spell was his guard, and charms were his physician, whilst he wore Paracelsean characters for the tooth ache, and a little hallowed wax as an antidote for every ill."‡

Rome.

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* It may be interesting to note the names of the several professors.

1. *Literature.*
   a Poetry. Theocritus and Callimachus.
   b Philosophy. Hegesias of Cyrene.
2. *Mathematics.* Euclid.
3. *Astronomy.* Timocharis.
4. *Medicine.* Cleombrotus of Cos, Herophilus and Erisistratus.

(Vide Meryon's History of Medicine, Vol. I. p. 34).

† Vide "Historical notice of Surgery" by Professor Miller.

‡ Vide Meryon's history of Medicine: Vol. I. p. 381.

Towards the close of Roman History, however, Medicine attained a more due share of recognition and honor, owing principally to the learning and labours of Celsus—the distinguished contemporary of Horace, Virgil and Ovid—whose medical works are models alike of philosophic research, of careful observation, and of classic elegance.

Celsus.

The history of medicine since the commencement of the Christian era, affords an interesting field of study to the medical Antiquarian. The holy principles of the Gospel, the example and teaching of our Lord himself, the miraculous powers conferred upon the Apostles and infant church, the mission, then initiated, of love and humanity to man, must have stamped upon medicine, as it came under Christian influence, a new and holier impress. So we may reason, and so we would fain believe, but such influence soon passed away. The superstitions of the early Church bore their logical fruit; the practice of the healing art fell into the hands of anchorites and priests, and the tomb of the Martyr and relic of the Saint took the place of the temple of Esculapius and the incantations of the Augur. In this respect medicine but shared the fate of higher and holier things. Nor is this to be wondered at, for medicine is a weapon too efficient, too near the human heart, too conversant with human wants and weaknessess to have escaped the notice of those, whose interests it was to wield it for their own purposes. The christian priesthood took up what the Heathen grasp had relinquished, and medicine began a second time, a career of superstition and degradation.

Christian era.

To the monastic establishments, however, we are indebted for the preservation of the works of the older Authors on medicine, and to the monks we owe the first institution of Hospitals.

Instead of the apotheosis of medical men, as in heathen times, we find in the Latin Church that nearly every disease had its presiding Saint, to whom supplicants for relief directed their devotions. Amulets were universally believed in, the Bezoar stone, the slough of snakes, elderwood, the child's caul, cabalistic words, the interlaced double triangle, and other talismans and charms, too numerous to mention, told how deep the current of gnostic superstition was, which swept over Christendom during the dark ages.

From the Saracenic School other superstitions were received and incorporated with the art of healing, and with the sister science of Chemistry. The transmutation of metals, the elixir vitæ, &c. Riches and immortality were to be the rewards of the discoverers of the Philosopher's stone, and of the chemical processes by which common metals could be transmuted to gold.

Saracenic School.

In the 11th century, Edward the Confessor, having a high character for sanctity, was supposed to be able to cure scrofula with a touch. This ridiculous ceremony has been continued almost down to our own day,* and learned ecclesiastics have written elaborate treatises, not to call in question the truth of the superstition, but to urge the claims of Saint Lewis of France or of Saint Edward of England to priority of miraculous power.

King's Evil.

In the second century the Jews founded a Medical School at Sora in Asia Minor. This singular and interesting people, retained for many centuries their close connection with medicine, and were regarded at one time as the most skilful practitioners of the healing art.

Jews.

Galen, whose medical theories ruled Europe for 1000 years, was born in this century.

In the 7th century the Benedictine monks established a Medical School at Salerno in Italy.†

Salerno.

In A. D. 641, the Saracens captured Alexandria, and gave its famous library to the flames; though it is known that they saved from destruction some of the most valuable of its Medical works. We must pass rapidly over the history of this brave, poetic and warlike race. They found the world effete, they gave it a new impulse. Their time is passed; the purpose for which they were sent by God has been fulfilled, and they are now waning daily before that faith, whose corrupt degradation they had summarily afflicted and punnished.

The Arabs highly valued the works of Hippocrates and Galen. They formed at Bagdad (in the 8th century) a great school with a Hospital and chemical laboratories attached, and during that, as well as the two succeeding centuries, the fame of the Arab physicians stood high. Except in Chemistry and Materia Medica, however, they added but little to our knowledge; they were more distinguished as compilers and commentators than as original observers.

Arab Physicians.

The 11th century saw the close of the dark ages and the partial rendering of the cloud, which had so closely enveloped the human mind for centuries. The medical schools of Montpellier, Bologna, Naples and Mes-

11th Century.

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* Queen Anne touched Dr. Johnson for this complaint. The ceremony died a natural death under George 1st. The common name for Scrofula is "King's Evil."

† In connection with which fact, and in corroboration of the saying that there is nothing new under the sun, I may mention that females were admitted as Students of medicine in the College of Salerno. The names of five of these ladies have been preserved. "One of whom Constantia Calenda achieved a high reputation in her time."—Dr. Meryon's History of Medicine, Vol. I. p. 167.

sina appeared in rapid succession, to be followed, in the 12th century, by those of Oxford and Cambridge.*

13th Century.

In the 13th century the Medical Schools of Valencia, Paris, Toulouse, Prague and Vienna rose to fame.

15th Century. Recent progress of Medicine.

In the 15th century the invention of printing by Guttenberg marked the era of that mighty resurrection of mind, which culminated in the reformation of the 16th century. Humanity thus emancipated felt, for the first time, its rights as well as its powers, and craved for freedom of mind as well as for liberty of body. Medicine shared in the benefits of that mighty struggle between light and darkness. Out of the turmoil, she emerged, ennobled and purified. Throwing aside the trammels of authority and severing her connection with priest-craft, she has advanced more during the last 300 years, than she had done for decades of centuries before. Nature began to be studied more than books; facts were sought for more than authority, and the human mind, which had so long been walking in fetters, started a new race in the full consciousness of its freedom and its power. No longer the ally of superstition, astrology, necromancy and magic, Medicine is conforming itself daily more and more to the progress of philosophical reasoning; walking daily more and more steadily and willingly in the footsteps of the inductive sciences; culling truth from every science, and giving facts in return to every science, it at once touches the dearest interests of human life, and the noblest subjects of human philosophy.

Great Britain has nobly borne her part in the great revival. Omitting all mention of modern celebrities, we can appeal to a Sydenham, a Cheselden, a Jenner and a Hunter as examples of those high intellects which so nobly ushered in the present thinking and practical age of medical research. No longer passively taking the impress of the varied phases of the human mind, in its states of pupilage and ignorance, medicine is now actively impressing that mind in turn, and nobly taking part in the immense intellectual activity which distinguishes the present century.

Medicine; a civilizing agency.

If this be so, it cannot be presumptuous in us to claim for the science and art of medicine a high position among the civilizing agencies of the world. In corroboration of this claim we can appeal to the Students of literature, philosophy, science and art; we can appeal to those noble institutions, which, whether as Schools, Hospitals, Asylums or other medical charities, do honor to our native land; we can appeal to the poor, the outcast, the sick, the suffering of both sexes

* St. Bartholomew's Hospital in London was also established about this time.

and of all ages, the blind, the deaf, and the dumb who rise to call our art blessed. Law has claimed our willing help and has obtained it, and crime has been exposed to the light of day. The soldier and the sailor, both in peace and war, have acknowledged our humanity and our help. The public has to thank us for many a sanitary truth laid clearly before it; whilst by its contributions to every department of human knowledge its stores of general information and its independent tone of research, medicine has laid the thinking and working world under deep obligation.

Medicine as an element of civilization ranks with other agencies of general education. Its study educates, as well as expands the mind; cultivates the memory and judgment; developes the powers of observation and reasoning; disarms prejudice and corrects misapprehension; removes error and substitutes truth; gives mental power and moral tone. It opens up the treasury of Western science and language, and introduces to special studies, as those of Botany, Natural History and Chemistry, which are calculated to enlarge the mind, and refine the ideas, whilst its practice affords a noble outlet for life—labor. In fine, medicine touches more or less upon every object of human observation, upon every subject of human thought, and brings at the same time its professor into close contact with the practical utilities of life.

Special claims of medicine.

But besides these general advantages which she possesses in common with other agencies of general education, medicine undoubtedly claims special advantages of her own, arising from the nature of the agency and from the direct mode in which that agency acts upon the human heart. The very nature of medicine as the "art of healing" demands that it be prosecuted in a kind, unselfish and honorable spirit, and no medical teacher is doing his duty to his pupils who fails to present it in this light, or to inculcate upon them a love of truth and honesty, kindness and charity, consideration for the poor and afflicted, humanity to all. The studies themselves make the student familiar with the inner man; with its sorrows and sufferings; its distresses and its weaknesses; its cries for sympathy and help; and such studies ought to soften, and do soften every true manly heart. They bring heart closer to heart in kindly sympathy, and thus prove to the inner consciousness, and by a vernacular, common to the whole brotherhood of man, that "God hath made of one blood all nations of the earth." In the structure of the human frame, in the emotions of the human heart, in the activities of the human mind, the observant student can read *the essential unity of the Human race*, and as he traces on the Hindoo body the smallest fibril of a nerve, by help of a text book based on the Anatomy of a Briton; as he sees that the same hopes and fears animate equally the children of the West and of the East; and as he lays his own mind alongside that of the

Anglo-Saxon stranger, and feels that their powers, if differing *in degree*, are at all events, the same *in kind*, he may be led a step higher, and feel convinced in his heart, that He who created the Briton created also the Hindoo, and that that God, proved to be ONE in operation, must be ONE in nature too.

Influence of the Medical man.

Every enlightened and honorable Medical man is the centre in India as elsewhere, of a wide and daily widening influence for good. If a native, what prejudices among his countrymen may he not uproot; what ignorances may he not dispel; what false ideas of western influence and action may he not remove; what direct advantages may he not confer; what deeds of mercy and of love may he not perform? His principles too will shine, in striking contrast with those which guide the unscrupulous practitioners, whom he has been educated to supersede.

An important advantage possessed by Medicine, regarded as an element of civilization, depends upon the traditional respect with which the art of the physician is regarded in India. To the practitioner and to the teacher of Medicine, equally from patient and from pupil, is this respect freely and naturally rendered.

May I add another element to be taken into consideration, namely, the peculiar aptitude exhibited by natives of India for Medical study. Were their memory a little less acute, their judgment a little better balanced, no students in the world would outstrip the Bengalees of Calcutta, the Parsees of Bombay, or the Mahommedans of Hyderabad.

That Medicine is exerting its influence upon the people of this land, not only through the medium of European practitioners, but also of the pupils of our Schools and Colleges, is patent to all who candidly review the history of the last twenty years. In his speech at the Grant Medical College a few days ago Sir B. Frere said, "In another way, the education afforded at that College had told, in a remarkable manner, on the native community. The true principles of sanatory science were now very generally diffused among educated natives; and sanitary reforms, which were utterly impossible owing to ignorance and prejudice a few years ago, were now believed perfectly feasible." Even the stereotyped and almost immoveable Mahommedan is bending to the influence, and is doing many things contrary to the customs of his people, and to the hereditary prejudices and bigotry of his race.

Do not let me be misunderstood; I have no desire to raise *secondaries* to *primaries* or to depress *primaries* to *secondaries*, as will be seen presently; nor do I mean to say that, with reference to Medical education and influence, all has been plain sailing, or that the natives of this land, under the influence of Medical or any other secular education, have at once seen and abandoned their national

ideas and hereditary trammels. On the contrary, every College and School can tell its own tale of difficulties and discouragements; of earnest labor and puny fruit; of glad hopes and dispiriting realities. Amid the faithful few, have been found, too often, the faithless many, and earnest workers have been forced to acknowledge, that *principle* is as necessary as *power;* that *man has a heart to be reformed, as well as a head to be informed.*

Withal there is much to cheer and to encourage. Honest labor, sound in policy, persevering in action, must sooner or later bear its sure fruit and reward. My own experience leads to the conclusion, that Medical education, pursued in the right way, and in the right spirit, in sufficient patience, and with sufficient patronage, will take a higher and more important share, than it has even yet done, in the civilization of this land.

A glance at even a small portion of the field of operation in India, will place this view in a strong light.

India regarded as a field.

Inhabited by various races in every different stage of civilization, India presents to the Medical Philosopher this striking feature, that it offers to his contemplation, in actual existence, an epitome and historical retrospect of the earlier stages of development, through which, in the Western world, his science and his art have passed. Much of what we have said of the early history of Medicine is applicable to India of the present day. In the primitive tribes of this land, Medicine may be seen in its earliest stage, when instinct and the experience instinct slowly collects, alone guide the native to the employment of simple remedies, calculated to relieve pain and abate disease. Indeed, every phase of Medicine may, with a little research, be traced: the mysterious, the supernatural, and the stages in which the Astrologer and dealer in talismans, amulets and charms are the most prominent figures. In India may be seen Deities powerful over certain diseases; specially holy and efficacious shrines; magic and exorcisms; the fear of the evil eye; all powerful incantations; love potions; universal quackery and imposition. Sufficient materials truly for any philosophic treatise on the development of the science and art of healing. Nor is this all, for along with the simple herbalist and the wily quack we have also the sage oriental gnostic, possessing more or less of the characteristics of thought, which marked his countrymen 2,000 years ago.

Illustrations of the Saracenic stage of Medicine.

Nor are illustrations of the Saracenic stage of medicine wanting in India. Times are changed, but the inner spirit still exists, and there are thousands of minds in India which, could they be transferred to the court of the old Caliphs of Bagdad, would find that a thousand years had neither extended their stores of information, nor removed a single prejudice.

Such specimens of ancient history are to be been among the Mahommedans of cities like Hyderabad. There we find the educated physician, proud of his scanty knowledge of Arabic and Persian, too grand a man to be a Surgeon or touch with his hand a pauper patient. Full of grandiloquent phrases and learned medical terms, he has not one single clear idea on the subject of disease ; he feels the pulse, but understands not its warnings ; he examines at a distance the urinal, but comprehends not its indications. A theory is ever at hand to account for all things. A hereditary physician, he requires no diploma, he seeks for no hospital. A heaven born genius, he requires no clinical experience. He reads books seldom ; nature never. His mouth is full of Hippocrates, Galen and Avicenna, but it is doubtful whether he has ever even read their works. These and other old authors are his courts of appeal against all innovations and progress. Their works are to him the acmé and perfection of all possible science in Medicine. With the sick poor, he has no special sympathy ; he gives the alms his faith requires, but to build a Hospital or erect a Dispensary are ideas which never crossed his brain. All surgical disease, of course, he hands over to the Barber ; Surgery lies in a province entirely beneath that of the dignified practitioner in Medicine. He dabbles in Chemistry a little, if he happens to have the means, and he prosecutes the old ever-beginning never-ending search after the "elixir vitæ" and the transmutation of metals.

Hyderabad.

There are other practitioners of the healing art, less dignified than the above-mentioned individual ; with less learning, they assume greater familiarity with the works of the old Authors ; they possess Elixirs of life, potent occult remedies, wonderful medicines from far off lands ; in short, they fully supply that craving which is inherent in the human mind for the mysterious and the secret, a craving which, whether in ignorant Hyderabad or enlightened England, constitutes the rich patrimony and heritage of the knave and the charlatan.

But as these learned and unlearned physicians do not practically supply all the wants of the poor and diseased, other classes of practitioners are to be found, each claiming to do something to relieve suffering humanity.

Alas! for the human race in the hands of such pretenders to the healing art in India ; fakeers with their holy sentences, religiosi with their amulets and charms, herbalists and quacks of all shades, and of all kinds and degrees of effrontery, fatten upon and torment the wretched people of the land. Chief among the torturers are the Barbers. As in England, in days gone by, the Barbers of India are also phlebotomists, some are lithotomists, and all are general Surgeons. A glance at their "*armamentarium*" would make an English Surgeon shiver, and

Barber Surgeons.

would recall to his memory, with painful distinctness, the primitive tortures depicted by old Scultetus. The boiling oil and marking nut; the splints, forceps, hook, and cauteries; the leaves, powders and liniments; the razors, scalpels, needles and seven-inch bent nails. How poor humanity bears it, I cannot explain, for surely it would be better one would think, in prospect of such help, "to bear those ills we have than fly to others that we know not of." No cure without agony seems to be the rule. Violence and pain appear to be the invariable accompaniments of all native treatment; whether for old or young, for the strong man, the sickly woman, or the feeble infant. Especially is the actual cautery highly valued and liberally applied; to the head of the puerperal female; in multitudinous spots over the body of the convulsed child; in tartan streaks over the abdomen of the colic-troubled infant, or by the heated ramrod, in various erratic figures, over the stomach of the dyspeptic Arab or merciless Rohilla.

Oculists, &c.

Of the native Oculists, what can be said? In the unexcitable constitution of the native their rude and simple operation for the depression of Cataract is at times successful, too often, however, it is destructive of vision. The native lithotomists know nothing of Anatomy, and, like Frère Jacques, cut "on the gripe."

Midwives.

Native midwives—what shall we say of them? I cannot, in a general assembly like this, reveal one tithe of what I know of their ignorance, superstition, merciless tortures and unhesitating sacrifice of human life, when goaded to desperation by ignorance and or by superstition. The amount of female and infant life lost in childbed in India from ignorance and crime alone, is beyond computation.

India's wants.

India's wants is a current phrase. Do we, when we use it, clearly distinguish between India's wants and England's wants in India? By present medical arrangements not one hundredth part of this country's wants are, or can be met. India's wants must be met by her own sons. We can be little more than the teachers of India's teachers. India wants her village barbers to be taught sufficient of the art of Surgery to save life and limb; she wants her native midwives to be taught practically the ordinary duties of their delicate and necessary profession; she wants her oculists to be instructed, so that eyes may be saved, not destroyed; she wants her native hakeems and doctors to be taught the elements of their profession, so that remediable disease may be cured, poisoners may quake, vaccination may progress, and the inhabitants may not desert their homes, when small-pox and cholera come like destroying angels. India wants her own tools, so to speak, to be improved and if possible retained, so that hereditary prejudices may not be traversed, until the people learn to question their prejudices, and more trustworthy agents can be provided.

India wants moreover outlets for her sons, both East Indian and Native; not only for the studious and learned, but for the sensible and the willing of her larger as well as smaller towns.

In bringing western knowledge to bear upon India, we have perhaps too strong a tendency to begin at the top, and leave the bottom to take care of itself; to select the imposing and grand, rather than prosecute the humble and useful. I think India requires us to begin at the top and at the bottom too; to work from above down, bringing science to bear upon the masses in that direction: to work also from below up, bringing sense and judgment to modify and improve native and existing materials, so that the co-operation* and the very prejudices of the people may be on our side. What would be thought of England if she strung this land from end to end with Telegraphic wires, and yet neglected the native roads, native tanks and native bunds. Turkey, with its civilization of the 19th Century, forced on it by Europe, and engrafted on the civilization of the 6th, may teach us a valuable lesson, here in India. But this land needs something more than the education of her village practitioners, she requires a better style of Medical man to overlook these; one thoroughly educated in his profession—as those are who hold the diploma of this College,—or thoroughly inured to all practical facts by long experience, even though he be not learned, in the University acceptation of the term. Such men are to be found in our subordinate services, men of experience, judgment and merit. Men of this stamp, familiar with the customs, prejudices and languages of the people, are the very superintendents a scheme of this kind would stand in need of. Such positions of responsibility, given as the reward of faithful services or of marked merit, would draw good material into the Service, and outlets would be provided for those, whose outlets are very few indeed.

India however requires a still higher type of physician, and in her sons both East Indian and Native she has no lack of good material. It is evident however that co-operation of different elements is here required for success. It is for Government, in the present state of this country to create the demand, and, by its educational machinery, to provide also the supply; to adopt a liberal policy; to offer fair encouragement and appropriate fields for highly trained medical men. It is for Colleges such as this, to second that liberal policy; to have high aims and high standards of education; and it is for the public to furnish *good materials;* to afford sympathy and help, and to shew *by deeds* their hearty approbation and co-operation. The state of an Institution like this, will always in-

* It gives me great pleasure here to refer to the efforts made by Dr. Shortt of Chingleput, to secure the co-operation of the Natives at Chingleput and Conjeveram towards the erection and maintenance of self-supporting dispensaries.

dicate with approximative accuracy the policy of Government, and the co-operation as well as liberality of the public.

Madras. Madras, however, is in many respects peculiarly situated. In matters connected with Medical education, the Government has long been and must continue to be for some time to come, the principal Patron. Compared with highly favored Calcutta and wealthy Bombay, Madras is a poverty-stricken place, as regards its East Indian and Native inhabitants. There are no wealthy Baboos or millionaire Parsees here to build our University, to found Hospitals or endow Scholarships ; no natives with large hearts and open hands to back up the noble efforts of Government, and to encourage both teachers and taught. Out of the public service there is but a limited field for educated medical men in Madras itself, and little, if any field at all, at present, beyond the limits of the Presidency Town. Hence it has happened that with other more remunerative outlets for exertion and enterprise open, this Institution has ever been more of a *school* for educating medical subordinates for the public service, than a *college* for rearing medical men for general practice. In the more limited field of its operations this school has done its duty well, and the medical subordinates of Madras have proved themselves, what I hope they will continue to be, second to none in India. In the higher field of medical education this College made a vigorous start under its able and zealous President Mr. Key, but the impulse then given appears not to have been followed up, at least in the same direction. Changes have taken place, in all Departments, with the result of affecting the popularity and usefulness of the College, and of disappointing those, who had hoped that this Institution would have held its own with the Colleges of Bengal and Bombay, in the race for professional distinction and national utility. There are who think that the material of the higher style of Medical man is not to be found among those born in this land. A similar view, to be equally, I have no doubt, falsified by history, may have crossed the mind of the old Roman, as he looked upon the few huts inhabited by painted savages on the banks of the Thames, and wondered in himself, if ever a Rome or a polished Roman could, by any possibility, spring from such unlikely beginnings.

Let me say, from my own experience, that the material exists. There is no want of ability, perseverance or zeal. The material is plastic too, and if we are now faithful to our duty, and to India's future, we shall be able to mould it, to *refine* it, and to give it the right direction too. Let us have high standards, high education, encouragements calculated upon the market value of qualifications, and open roads, and I for one will have no fear of India or of India's sons.

We have spoken at length of medicine in its history and present

state of development; we have regarded it as an element of education and have viewed India as a field for its operations; we have glanced at existing Medical Institutions, and remarked upon the material on which they are expected to operate; and we have endeavoured to shew the special advantages which Medicine, as an element in the secular civilization of India, undoubtedly possesses.

SECTION 2.—*Remarks addressed to the Churches.*

Medicine an agent in the Mission field.

But our subject would be incomplete and injustice would be done to the sacred profession of medicine, were we to fail to point out how important an agent it must be, in assisting the operations of that higher civilization, which God has commanded us to go and publish to all nations.

Man's duality.

Sound philosophy recognizes, what Holy Writ reveals, that man is a duality in unity; that he has a spiritual as well as a physical nature; and that in his higher nature, he has, as we have already said, a heart to be *reformed* as well as a head to be *informed*. Man, in short, needs change of heart as well as cultivation of intellect; he needs new motives as well as new ideas; new aims as well as new powers; he needs not only to be educated, but when educated, to be set in the right road; he needs not only that his errors of ignorance be swept away, but that germs of truth be planted in their stead. Christianity is the *primary agent* in the civilization of a nation; all other agencies, however necessary and admirable, are but *secondary*, and are valuable in proportion to the amount of Christian spirit which they embody in their teachings, and in their tendencies. In morals as in physics a high source alone, gives a high level. "*I will raise this world*," said Archimedes, "*but you must give me another world as a fulcrum for my lever.*" Logically speaking, *no civilization can be complete, nor can any education be truly liberal, which does not fit man, in his whole nature, for his whole future.*

Medicine is the handmaid of Religion. Do the Churches sufficiently recognize that fact? These benches testify plainly that in Madras, at least, the fact, if recognized, is not acted upon as it ought to be.

Christianity, while it deals principally with man's higher nature, overlooks not his lower. The great founder of our faith, knew what was in man. He heard the world's loud cry, "have mercy upon us," and He answered, "I have compassion." Knowing human springs of action, conversant with humanity in its entirety, He has left on record his example, that his followers may walk as he walked. In his grand mission of love, the power of healing occupied *a very prominent place.* He was the first, and with all reverence be it said, *the Great Medical Missionary.* Compassion and its correlate gra-

titude, constitute the true vernacular of humanity. The logic of the human heart is short and pithy. I am hungry ; I want food ; I will go where I can be fed. I am sick ; I need relief ; I will go where I can be healed. These may be selfish, but they are true human motives. Our Master recognized them, and fed the hungry and healed the diseased. Deeds of mercy accompanied words of love. The heart was gained, and through it the understanding was reached ; a tangible benefit introduced a greater but intangible good. The heart gained, prejudices softened down, gratitude awakened, the great Teacher clothed His grand truths, not in lifeless dogmas, but in the living garb of type, similitude and parable, so that men might rise from the type to the reality, from the symbol to the truth embodied in it.

What a type and symbol,—what a text to preach from, is disease!

If our Master gained man through his heart, so must we. The intellect is hedged round with self-sufficiency, and with prodigious obstacles, not so the heart ; and that can be reached, as far as man is concerned, by heart alone.

We ask again, does the Church in this land sufficiently recognize this grand principle? Is the healer still an important fellow worker in the Mission cause ? Is the vast power of medicine upon the outworks and obstacles of the heart sufficiently understood ?

What are the difficulties which clog the Missionary's path, which delay his success and postpone his triumph ; and, can medicine do nothing to remove them ?

Does he complain of caste ; of the difficulty of acting upon the female part of the population ; of closed doors and hermetically sealed domestic life ; of prejudices and fears ; of motives misunderstood ; of dealing with the outer, and being barred admission to the inner man ? To such a one we say, your Master healed, that he might teach, your Master fed, that he might gain men's willing ears ; your Master commanded his Apostles and his infant church to heal, and he gave them the power to heal, in imitation of his own example. Has medicine no influence upon caste? Enquire and see. Has medicine no power over the female ? Disease is catholic, and where disease enters, the medical man will not long find the door barred. Disease is catholic, and brings the female and the child, as well as the adult, under man's benignant influence. The art of healing too appeals to man, when his heart is low and sick and faint, when "who will shew us any good," is the pleading of the depressed spirit. The physician passes through the outer phantom and gets to the inner man. He sees humanity, not in its court but in its every-day dress, when the secrets of the heart are revealed. The physician brings a tangible good, the patient presents a living and natural text with heart softened and ready for impressions. Through

the kindness of his physician, man has regained faith in his brother man, and his heart is ready, more ready than it was, to regain faith in God too.

Surely Medicine must be a valuable handmaid of religion; its help; its pioneer; the leveller of many a mountain of difficulty; the filler up of many a valley of prejudice and aversion.

India, a grand field for the Medical Missionary.

India is a grand field for the Medical Missionary. I hold strong views on this point, for I believe that no Mission to the heathen in this land, in the earlier stages of that mission at all events, is complete in its agency, or is acting up to the example and precept of its great Head, which does not recognize and act upon the principle, that medicine is not only the handmaid of religion, but "*the necessary complement of the Christian Ministry.*"

Section 3.—*Remarks addressed to fellow labourers in the Educational Field.*

A few words in conclusion.—The civilization of India is the desire of all. In this great work we are all, whether sacred or secular, fellow-workers. To be fellow thinkers of God as men of science, what true nobility; to be fellow workers with him, what true utility; to be fellow-lovers and fellow-helpers of our brother man, what true humanity!

India needs light; light *direct*, light *indirect*. Workers in this enlightenment are not rivals but allies. Let us act upon man from his spiritual, mental and physical sides, joining hands as friends, not as foes.

I believe, if "darkness is upon the face of the deep" in India, that God is also moving upon the face of India's waters. Great things are doing; much seed is sowing now, and has been sown; a greater work is going on than many even dream of. The fiat, I believe, has gone forth, "let there be light." Let our contribution to that light be clear and honest and useful; each doing his own work according to his ability and his sphere, so that when the darkness passes away and the dawn shines resplendant, it may be found that we have all labored to advance the common end, even the glory of God and the good of our fellow man.

Section 4.—*Farewell to pupils leaving College.*

Young lads! who are entering upon the active duties of life and of the public service, and who occupy these benches for the last time to-day, I, in the name of the Principal and Professors, bid you farewell, and wish you a hearty "*God speed.*" I address each of you

for the last time, in the words of a celebrated physician, words which adorn, as you know, one of your college text books. "THINE IS A HIGH AND HOLY OFFICE; SEE THAT THOU EXERCISE IT PURELY; NOT FOR THINE OWN ADVANCEMENT, NOT FOR THINE OWN HONOR, BUT FOR THE GLORY OF GOD AND THE GOOD OF THY NEIGHBOUR. HEREAFTER THOU WILT HAVE TO GIVE AN ACCOUNT OF IT." *(Hufeland.)*

His Excellency the Governor rose at the conclusion of Dr. Smith's address and bore testimony to the interesting and important nature of it, and to the ability by which it was characterized. His Excellency then addressed the Students, congratulating those who had earned distinctions and honors in their Collegiate course. He next alluded, with expressions of regret, to the generally unsatisfactory nature of the Reports of the Principal and the Professors regarding the attainments and diligence of the great majority of the Students. All the Professors, he added, had reported that at the head of each class were to be found intelligent and zealous Students—but they also had to record that many had failed in both respects. This he felt, deserved to be seriously noticed, for the consequences to the young men themselves might prove very serious. No greater mistake could be made by them than that they should suppose that their duty was restricted to, or their interest promoted by, confining their exertions simply to the attainment of an amount of knowledge sufficient merely to qualify for any named appointment in the different branches of their profession. Government wanted and were willing to encourage general attainments and, His Excellency added, he and the members of Goverment would be glad to advance the prospects of those who studied at the College, if opportunity offered—and he hoped that some such opportunity would present itself; but on this point he considered that at present he must speak cautiously. After a few words of encouragement to the Students—and of expressed hope that future Reports would be more favourable, His Excellency concluded his remarks by impressing upon his hearers the pleasure arising from acquired knowledge and the inevitable sorrow and suffering sure to follow neglected opportunities and studies disregarded.

Cholera in the Calicut and Salem Jails.

JUDICIAL DEPARTMENT.

Proceedings of the Madras Government.

Read the following papers :—

From ROBERT COLE, Esq., *Principal Inspector General Medical Department, Fort St. George ; to the Honorable* A. J. ARBUTHNOT, *Chief Secretary to Government, Judicial Department, For St. George, dated* 18*th April* 1863, *No.* 74.

I have the honor to solicit the attention of Government to the fact, that very severe outbreaks of Cholera have occurred recently in the Jails at Calicut and Salem.

2. Regarding the former Jail, I have the honor to submit a report* by Dr. Shaw, Inspector General of Hospitals, who was on duty in the neighbourhood, and proceeded to Calicut to observe the progress of the epidemic.

* Dated Calicut, March 30, 1863.

3. The predisposing causes adduced by that Officer, viz., defective diet, and overcrowding, and deficient ventilation on the sea-face of the Jail, were, I have no doubt, the chief causes of the development of the disease and of the lamentable loss of life.

4. In the new Salem Jail, hitherto so healthy, it seems that the separate cells built for the confinement of one prisoner, have been occupied by four or five. Dr. Shaw's report on the epidemic in this Jail I expect to receive in a day or two.

5. In both these instances the disease originated amongst the prisoners, there being no Cholera among the populations at the time. In both instances the evil effects of huddling persons so closely together have been manifested.

6. I have reason to believe that the Provincial Jails are all more or less overcrowded, and similar fatal results may possibly occur in other Districts, if steps be not taken to relieve the prisons of the excess of occupants.

7. The Inspector General of Jails being absent at some distance from the Presidency, on duty, I deem it right to bring this subject at once to the notice of Government.

From JAMES SHAW, Esq., *Acting Inspector General of Hospitals; to the Secretary to the Principal Inspector General Medical Department, dated Calicut, 30th March* 1863.

In obedience to the instructions conveyed in a Telegram received from the Principal Inspector General "to report if Cholera is abated, to investigate and report the probable cause of the outbreak," I have the honor to make the following observations:—

I have already reported that the disease has much abated. In the margin the daily admissions, recoveries, and deaths up till to-day at noon is shown.

Month and Date.	Admission.	Recoveries.	Deaths.
March 17th... ...	2	1	1
18th... ...	3	1	2
19th... ...	15	4	11
20th... ...	11	4	7
21st... ...	10	4	6
22nd... ..	19	4	15
23rd... ...	13	6	7
24th... ...	6	3	3
25th... ...	11	4	7
26th... ...	7	0	2
27th... ...	19	5	14
28th... ...	2	2	0
29th... ...	11	8	3
30th noon..	5	4	1
	130	50	84

2. There was no satisfactory proof that there was even one case of Cholera in the town of Calicut, although the Jail is partially surrounded by the houses of the inhabitants, the conclusion from this was, that the existing cause of the disease was within the Jail itself.

3. I several times most carefully examined the Jail and could detect nothing wrong in the drainage; the wards for the prisoners are excellent, lofty, ventilated from the sides and the ground, the sleeping places are wooden platforms raised upon chunam pillars about 2½ feet from the ground; the wards are kept scrupulously clean, and baskets of charcoal are, by Doctor Wyndowe's orders, hung up in each; indeed, were the number of prisoners restricted to that which the Jail can properly receive, there would be little to find fault with.

4. Dr. Wyndowe in his report upon the Jail, 24th February 1863, says, "the total space of all the wards is 96,169 cubic feet, which, allowing to each prisoner 350 cubic feet, would accommodate 274 prisoners; whereas the number of incarcerates at present amounts to 401, if from this be deducted, females 9, sick 24, waiting trial 12, and civil 12, still the total amount 352 shows the Jail to be overcrowded even allowing the minimum space of 350 cubic feet."

5. But owing to a wall as high as the jail itself surrounding it and in no place ten yards from it, the full value of

the ward ventilation is seriously interfered with, and when it is recollected that these men are shut up for 12 or 13 hours at a time, and that the accumulated discharges of the bowels and bladder of the occupants are retained in the same room for this period, these with the emanations from the bodies of persons closely packed together still further poisoning the air they breathe, it is not astonishing that disease should be engendered when only 240 cubic feet is allotted to each man. Were 500 cubic feet, which is the lowest ordinary allowance of space for a man, given to each prisoner, the Calicut Jail ought not to have within it more than 200 convicted prisoners at one time.

6. The nature of the diet to which the prisoners had been restricted undoubtedly rendered them less able to contend against the vitiated atmosphere they were breathing for so many hours daily.

7. In my demi-official letter to the Principal Inspector General, I stated that the subject of the diet for the prisoners had for some time been under Dr. Wyndowe's consideration, and I sent a copy of a letter from that gentleman to the Judge of Calicut dated 16th March, the day before Cholera made its appearance in the Jail. In this able letter it is shown that "the diet of the prisoners in the Jail consists almost entirely of carbonaceous food," and points out "that although nitrogenous food may, at a great loss, replace carboniferous as a supporter of respiration, yet it is certain that carbonaceous food cannot replace nitrogenous for replacing textural waste." The new diet proposed had not been introduced when I returned to Calicut on the 26th. The "dry conservancy" is that in operation at the Calicut Jail, the tubs in which the discharges from these prisoners had been collected during the night being carried to the sea half a mile frow the Jail and there emptied.

8. It appears evident that the outbreak of Cholera in the Jail of Calicut was dependant, 1st, upon the convicts being restricted to a most unfit diet; and 2nd, to the overcrowding of the Jail.

9. To remove these causes it was recommended in conjunction with the acting Zillah Surgeon, Dr. Pearse, to give each prisoner, in addition to his present diet, 4 ounces of mutton daily, and to empty the Jail as quickly as possible; if this could not be done entirely, to remove as many prisoners as possible and to have the whole Jail white-washed. One or two minor changes were also effected, amongst others,

muncheels being supplied to carry the sick from the Jail to the Hospital, a distance of half a mile, instead of being obliged to walk supporting themselves on two fellow convicts; and having the receiving tubs tarred and directions being given that they were to be fresh tarred every third day, all these suggestions were at once carried into effect under the orders of Mr. Cook, Civil and Session Judge.

10. This epidemic has been characterized by very little purging, vomiting, or cuticular exudation. Spasms must have been very rare. The men appeared as if struck down by a deadly poison. Many died in a few hours; two cases which I saw only lived for two hours after the first symptoms of the disease.

Every variety of treatment was tried, but all appeared equally inert. Friction, hot bottles, hot bags of sand were most assiduously applied by numerous orderly prisoners, who it is but justice to mention, were unwearied in their attention to their fellow convicts. I regret to be obliged to say that many of these men fell victims to this disease.

11. The first persons attacked were the Moplahs, and it was attributed to their habits of starvation during the feast of the Ramzan which commenced on the 20th of February and did not terminate until the 22nd of this month. But ere long no class of the inmates of the Jail were exempted from attacks of the disease, as by the 27th the admissions of Moplahs were 58; of Hindoos, including 4 Christians, 48; of the former 32 and of the latter 28 had died up to that date.

(True Copy.)

(Signed) W. R. Cornish,

Secy. to Prinl. Inspr. Genl. Medl. Dept.

From Robert Cole, Esq., *Principal Inspector General Medical Department; to the Honorable* A. J. Arbuthnot, *Chief Secretary to Government, Judicial Department, Fort Saint George, dated 8th May* 1863, *No.* 90.

Referring to my letter* on the subject of recent outbreaks of cholera in the Calicut and Salem Jails, I have now the honor to forward a Report on the latter building and the epidemic which has

* No. 74 of 18th April 1863. Dated 14th April 1863.

lately prevailed therein, by Inspector General of Hospitals James Shaw, for submission to His Excellency the Governor in Council.

2. I need add nothing to the representations of the Inspector General, but an emphatic expression of my concurrence in his views and my most earnest advice that his recommendations should be carried out.

3. Perhaps His Excellency in Council may be pleased to notice with favorable commendation the exemplary conduct of Assistant Surgeon Marrett and the Medical Subordinates, especially of 1st Dresser Madura Naiagum, No. 156, in the performance of their duties, as named by the Inspector General, in this terrible emergency.

From JAMES SHAW, Esq., *Acting Inspector General of Hospitals; to* W. R. CORNISH, Esq., *Secretary, Principal Inspector General Medical Department, dated* 14*th April* 1863.

I have the honor to report for the information of the Principal Inspector General Medical Department, that upon my arrival at Salem on the 13th April 1863, cholera had almost ceased in the Jail.

Month and Date.	Admitted.	Discharged.	Died.	Remaining.	
19th March	1	0	0	0	
24th do.	1	0	1	0	
25th do.	1	0	0	0	
27th do.	2	0	0	0	
30th do.	4	0	1	0	
31st do.	12	0	5	0	
1st April	8	0	3	0	*Hindoos of different caste.*
2nd do.	3	0	2	0	
3rd do.	5	0	4	0	Admitted.....78
4th do.	15	10	4	0	Died.....39
5th do.	10	7	4	0	*Mahomedans.*
6th do.	8	0	4	0	Admitted..... 5
7th do.	2	1	5	0	Died..... 2
9th do.	4	0	2	0	
10th do.	1	0	1	0	
11th do.	5	0	3	0	
12th do.	0	0	3	0	
14th do.	1	0	0	0	
Total...	83	18	41	24	

2. In the margin is a Return of the admissions, recoveries and deaths from the 1st appearance of the disease up to the 14th instant.

3. There can be little doubt that overcrowding of the Jail was the immediate cause of the outbreak, although there are some points of conservancy arrangements which may be corrected, (to be noticed hereafter) yet, irrespective

of the over-crowding, there is nothing to account for the epidemic. There was no cholera in the town of Salem.

4. It may be out of my province to do more than indicate the causes of disease; but I am satisfied I shall be pardoned in strongly urging upon the authorities the necessity of permanently reducing the numbers in the Jails. I am aware this is a matter surrounded by difficulties, consequent upon the inadequate Jail accommodation for the increased number of criminals.

5. The only feasible plan which occurs to me is the encamping large gangs, and employing them upon works of utility. This will undoubtedly cause considerable outlay, but the question is, whether, until further Jail accommodation be provided, it is justifiable to keep so many men shut up together, as experience and science have shown must, I might also say necessarily, result in a large mortality.

6. Every proper means of arresting the sickness, within the powers of the local authorities, had been adopted, 200 men were removed from the Jail as soon as tents could be procured; this still left nearly 400 prisoners in the Jail, a number still too great, but would not be so if the defects in the upper ventilation of the cells be remedied, [remarked upon in my report upon the Jail].

7. I have much pleasure in bringing to the notice of the Principal Inspector General the zeal and unwearied attention displayed, during this outbreak of sickness, by Assistant Surgeon Marrett.

8. Mr. Marrett speaks in the highest terms of 1st Hospital Assistant Madura Naiagum, No. 156, attached to the Jail. He reports that the Hospital Assistant has scarcely left the Jail night or day, and that he felt perfect confidence that his instructions were always most faithfully carried out by Madura Naiagum.

9. 2nd Hospital Assistant Veerasawmy Naidoo, No. 455, has done duty at the Jail only for a few days, he is attached to the Sub-Collector's Department, but was brought to Salem for the occasion.

10. I have the honor to attach my report upon the Salem Jail.

REPORT ON THE SALEM JAIL.

14th April 1863.

The Salem Jail is a new building and has only been occupied since the latter part of 1861, it is enclosed by a wall 16 feet high, but at no part approaching nearer than 180 feet.

2. The Jail is formed of six separate radial blocks, each connected by an iron railing of several feet in length.

3. These blocks contain a series of cells, 144 in number, originally intended to carry out the "separate system," but this has been abandoned, and latterly the average number of prisoners has been 625—the greatest number locked up at one time was 693. Thus, a cell originally intended for one, has now to contain on an average 4⅓ individuals. I am informed that at times it has been necessary to confine as many as eight prisoners in one cell.

4. Each cell is $12 \times 7\frac{1}{2} \times 11 = 940$ cubic feet, secured by a swinging iron grated door about 6×3 feet. At the further end of the cell there is an iron grating about 6 inches high, by 30 inches long. Near the roof are three slits in the wall, 12 inches by 3, which form the sole means for the ingress or egress of air from above.

5. Had the "separate system" been carried out as originally intended, the means of ventilation would have sufficed for one prisoner; but when five, or as it occasionally has happened six, are shut up in a cubic space of 940 feet for 12 hours consecutively, and where the provision for the escape of the air from above consists only of three tiny openings, the respired air must become pestiferous. I do not do more now than allude to the fact, that, during the 12 hours the men are confined, their excretions remain in the cell in a large open chatty.

6. Mr. Rohde's original plan must have been departed from, as in his report for 1856, it appears to have embraced windows at the back of the cells. I am not aware that there is any Engineering objection to this still being done; but until this, or some other means of allowing a free exit to the respired air be introduced, there will always be danger in placing more than one individual in these cells. In paragraphs 6 and 7 (report for 1856) under the head of ventilation, Mr. Rohde lays down what is really the essential point in ventilating buildings, that it is not the amount of

cubic feet of space that is allotted to each individual, but the rapidity with which the air is passed out, and replaced, that constitutes the contents sufficient or otherwise. This principle has apparently been lost sight of in the construction of the Salem Jail cells.

7. The Hospital is without the prison itself abutting from the surrounding wall, and contiguous to the guard room; it consists of 6 or 8 cells of similar dimensions to those in the prisons, and one ward $29\frac{1}{2} \times 17 \times 12$.

8. Both in the Hospital cells and the ward the ventilation is most faulty; there is no grating opposite to the doors, the upper openings (4 in number) are only 4 inches square, and are not infrequently shut up by birds building their nests in them. The ward has *no upper ventilation at all.* There are two iron grated doors opposite to each other, but both placed at the same end of the ward. The Medical Officer was unable to give me any information why this very objectionable arrangement had been made in the building of the Hospital, and unfortunately the District Engineer was absent from Salem at the time of my visit. Were the ventilation improved, as I believe it might be, each cell could with safety contain three prisoners. I understand that the upper story of the Jail, now being built, is to be on the same principle as the lower.

9. There are no necessaries in the Jail, the men and women are taken out every morning and evening to separate enclosures about 50 yards from the prison wall.

10. In the enclosure for the men are seven trenches, each nine feet deep, three broad, and sixty long, these seven trenches are used indiscriminately; the accommodation for the women was similar, but upon a smaller scale. Driving on the public road between the latter, and the Jailor's house, the stench was most abominable.

11. Intermediate between these places set apart for the men and women is the Burial ground; here 43 bodies have been buried since the cholera made its appearance on the 19th ultimo. At present a considerable portion of the Jail wall is encircled by the men's trenches, the burial ground, and the women's trenches.

12. Upon inquiring why these trenches were placed so near to the Jail, I was informed there was no other place available within a very long distance; that all the ground

in the neighbourhood was freehold, and the proprietors would not permit the prisoners to use the ground.

13. Under these circumstances I suggested that all the trenches should have a layer of earth thrown in, sufficient to cover their contents; that for the future only one trench should be used at a time, and that every morning and evening the ordure should be covered in. I also recommended that the burials should in future take place at a greater distance from the Jail; but the difficulty already alluded to exists in carrying this recommendation out. It is much to be regretted that a new Jail should have been placed where the adjacent ground is occupied by private individuals.

14. I believe the system of having necessaries within the Jail compound, when there is sufficient space, and the "dry conservancy" strictly carried out, is in many respects much less objectionable than the present one. The principal difficulty in carrying out the "dry conservancy" is having a sufficiency of men—in a Jail there is an abundance—to take away at stated periods, the receptacles for the filth. There is ample room in the Salem Jail compound for necessaries.

15. Having chatties to receive the excretions of the night is objectionable. I am aware that difficulties exist to introduce any other substitute; but were there necessaries in the Jail compound, and the prisoners allowed to use them until locking up time, the quantity of excreta would be somewhat diminished.

16. In the Coimbatore Jail, in the corner of each ward, is a small receiver connected with a metal tube which conducts the urine to a tub *outside* of the ward—this is certainly better than allowing the urine of a large body of men to accumulate *inside* the apartment during 12 hours.

Barracks for the Police, and the Jail Warders and their families, have been built to the south of the Jail, and in my opinion much too near the latter. No means of conservancy for the Barracks at present exist, and should this not be remedied, ere long the emanations from polluted soil in such proximity to the Jail must add another and an unnecessary source of disease to its occupants.

(Signed) J. SHAW,

Acting Inspector General of Hospitals.

Memorandum showing the number of Convicts locked up in Jail from 6th March to 6th April 1863.

Month and Date.	No. of Convicts Locked up.	Remarks.
March 6th	614	
7th	615	
8th	615	
9th	617	
10th	620	
11th	621	
12th	617	
13th	622	
14th	626	
15th	626	
16th	623	
17th	620	
18th	623	The average number..... 624$\frac{7}{12}$
19th	621	
20th	620	The greatest number
21st	627	locked up..... 693
22nd	628	The present number of
23rd	628	prisoners..... 602
24th	631	
25th	628	
26th	628	
27th	630	
28th	629	
29th	629	
30th	628	
31st	627	
April 1st	625	
2nd	643	
3rd	635	
4th	630	
5th	627	
6th	621	up to date of encampment.

(Signed) H. Walter,
Jailor.

Salem Jail Office, 14*th April*, 1863.

Scale of diet issued in the Salem Jail.

Description of Grain.	Class of Prisoners.					
	Convicts.	Security.	Under trial.	Women.	Sick	Children.
	Rupees Weight.	Rupees Weight.	Rupees Weight.	Rupees Weight.	Rupees Weight.	Rupees Weight.
Raggy.....	60	55	50	50	45	0
Rice..... .	65	60	55	55	50	20

Condiments to the value of 3½ cash to each prisoner.
4 ounces of mutton to each prisoner on Sunday.
2 do do on Tuesday and Friday.

(Signed) HENRY WALTER,
Jailor.

SALEM JAIL OFFICE, 14*th April*, 1863.

From R. COLE, Esq., *Principal Inspector General Medical Department; to the Honorable* A. J. ARBUTHNOT, *Chief Secretary to Government, Judicial Department, Fort St. George, dated* 17*th June* 1863, No. 122.

I have the honor to transmit for submission to Government an Extract from a letter* from the Zillah Surgeon of Salem, by which it appears that the Jail of that place, notwithstanding the late frightful mortality from cholera, sufficiently shown to have resulted from overcrowding alone, still contains 516 prisoners, while the building was intended for 144 only—double that number might with safety, perhaps, be incarcerated, but I beg most earnestly to represent that it is dangerous to confine a larger number.

*No. 23 of 10th June 1863.

2. It will be seen that diseases caused by a vitiated atmosphere still continue to prevail, and it only needs the presence of the choleraic state of atmosphere, whatever the mysterious principle may be, to convert ordinary Diarrhœa into the more fatal form of disease.

EXTRACT.

"There are still there 516 prisoners, or 84 more than can be safely housed in it; and an addition of 50 or 60 fresh prisoners on the commencement of the next Session, may be confidently expected."

"I may remark that although the number of prisoners has lately (owing to the adjournment of the Courts) been slightly reduced, the Jail has continued more or less unhealthy ever since the outbreak of Cholera in March and April. Several cases of Dysentery, Diarrhœa and Atrophy, (from which the prisoners in this Jail previously were comparatively free) have latterly occurred, and during the last six or seven weeks, there has been a death nearly once a week."

(True Extract.)

(Signed) W. R. CORNISH,

Secy. to Princl. Inspr. Genl., Medl. Dept.

Digest of the replies of the officers in charge of the several Jails to the enquiry respecting Jail accommodation.

ORDER THEREON, *25th June*, 1863, *No.* 1,002.

The foregoing papers have reference to severe outbreaks of Cholera which have recently occurred in the Jails at Calicut and Salem, and which are attributed by the Acting Inspector General of Hospitals, who visited both stations—Calicut while the disease was prevailing, and Salem shortly after it had ceased—to overcrowding and, in the case of the Calicut Jail in some measure, to the unsuitableness of the diet.

2. The latter defect was remedied at once; and from a return recently received from the Officer in charge of the Jail at Calicut, it appears that the number of prisoners in that Jail has been reduced to 230, that it is not overcrowded, and is quite healthy. At Salem the Jail was relieved by removing 200 prisoners into tents; but from the Principal Inspector General's letter of the 17th instant, it appears that the number of prisoners is now 516, or 84 more than can be safely accommodated in it, and that an addition of 50 or 60 prisoners may be expected at the close of the approaching Sessions.

3. In consequence of the Principal Inspector General's reports on the overcrowding at Calicut and Salem, returns

were called for, of the number of convicts in confinement in the other Jails, and the number for which there is accommodation; allowing 503 cubic feet of air for each inmate. These returns show that, with but few exceptions, the Jails are generally either full or overcrowded, and that but little relief can be given by transferring prisoners from one Jail up-country to another.

4. The Grand Gaol at Madras, which is at present used exclusively as a Debtor's Jail, will, it is believed, accommodate at least 200 prisoners. The Officer in charge of the Jail at Salem will immediately arrange in communication with the Sheriff for sending this number of prisoners to the Grand Gaol.

5. Resolved that a copy of these Proceedings be forwarded to the Honorable the Judges of the High Court, with a request that they will be good enough to direct the Sheriff to arrange for the reception of the Convicts about to be sent to the Grand Gaol at Madras; and that the Commissary General be directed to make the requisite arrangements for dieting the prisoners. The Inspector General of Police will be instructed to furnish the necessary guards to accompany the 200 prisoners to be sent down to the Presidency to be accommodated in the Grand Gaol.

6. The other Jails most in need of relief are those at Cuddapah, Bellary, Trichinopoly, Tanjore, Madura and Tinnevelly. Fifty prisoners should at once be sent from Tanjore to Tranquebar, and the same number from Trichinopoly to Cuddalore. The Jails at Cuddapah, Bellary, Madura and Tinnevelly can only be relieved by moving the surplus prisoners into temporary Jails, either huts or such other buildings as may be available in the neighbourhood of works on which the prisoners may be employed. The Inspector General of Jails will give his immediate attention to this subject, and will make the necessay arrangements in communication with the Superintending Engineers of Divisions, reporting the same for the information of Government. Mr. Rohde will also give his attention to the defects pointed out by the Acting Inspector General of Hospitals in the Calicut and Salem Jails. He will report whether the wall which impedes the ventilation in the Calicut Jail cannot be moved to a greater distance from the building, and he will take steps for correcting the defects in the ventilation and in the conservancy arrangements of the Jail at Salem.

7. Orders will be issued in the Public Works Department with the view of expediting the erection of the upper story in the Salem Jail, which it appears is progressing very slowly.

8. The ventilation of the Nellore Jail is reported by the Zillah Surgeon to be very defective. That Officer's remarks will be communicated to Mr. Rohde.

General Hospital, Madras.

PUBLIC DEPARTMENT.

Proceedings of the Madras Government.

Read the following letter from ROBERT COLE, Esq., *Principal Inspector General Medical Department, Fort St. George; to the* Honorable A. J. ARBUTHNOT, *Chief Secretary to Government, Fort St. George, dated 25th February* 1863, No. 38.

I have the honor to submit herewith the returns of sick* treated during the last three years in the General Hospital, as called for in Proceedings of Government, No. 1,378 of 24th of November 1862, Public Department.

2. These Tabular Statements, however, will not be of much assistance in enabling Government to come to a decision regarding the salubrity or otherwise of the site of the Hospital buildings; and, moreover, those of the General Hospital, strictly so called, will not admit of comparison with the Regimental Returns for the same period, inasmuch as the *conditions of life* of the Civil patients, who come for the most part from the crowded and unwholesome streets of Black Town, from John Pereira's and Vepery, are very different from those of soldiers inhabiting spacious Barracks within the Fort.

3. The Returns now before me, considering the classes of persons received into the General Hospital, viz., aged and worn-out pensioners, poor Europeans out of employ, Mechanics and Artificers of the Railway and other departments, sick military details from other stations, sent to Madras for change of air and treatment, cannot, I consider, be properly

* As these returns are very lengthy, we have omitted the tabular statements of admissions and deaths from individual diseases, and have given merely an abstract showing the general totals.—ED. *M. Q. J.*

brought to prove the insalubrity of the site to which the sick are brought temporarily for treatment only. The ratios of mortality to treated are high, undoubtedly, when compared with Returns of purely Regimental sick; but they are not high when it is considered that many of the patients are old, worn-out, and hopelessly diseased, before they come under treatment.

4. In the class of miasmatic diseases, the proportion of deaths to the whole Hospital mortality has been smaller than has been found to be the case in the Madras Army for a series of years. Thus, of 73 fatal cases of the Military European patients in the General Hospital,* only 28 were due to diseases of the miasmatic class, or 38 per cent. In the whole Army, for a period of 18 years, the proportion of mortality from diseases of this class has been close upon 65 per cent. If there is one class of disease influenced more than another, in its virulence of type, by locality and site, it is this—which includes cholera, fevers, dysentery, diarrhœa, &c., yet the *facts* do not show that, all circumstances considered, there has been that amount of sickness and mortality, fairly attributable to local causes alone, which should induce us to condemn the site as unhealthy. There is, indeed, reason to suppose that the type of many of the diseases named is less virulent in those portions of Madras, which are exposed to the influence of the sea breeze than in other localities occupied by Military; and the figures quoted bear out this view as regards the Military sick in the General Hospital.

5. I do not attribute much importance to these figures as affording statistical evidence of the *salubrity* of the site of the General Hospital. The sanitary condition of the localities from which the patients are received, is a much more important consideration in determining the length of period under treatment of the sick, and the ratio of fatal cases to recoveries. Dr. Blacklock notices that the cholera cases from the Sailors' Home, Stringer's Street, and some other spots, are generally fatal; while from other localities the disease is of a more tractable nature. It is obvious, therefore, that the previous circumstances of the patients must affect very materially the result of treatment in the General Hospital; and it would be manifestly unfair to charge the objectionable site of that building with the mortality due to disease contracted elsewhere.

* This term is to be understood as used in contra-distinction to the portion of the same building occupied by the sick of the Regiment in Garrison.

6. But there is evidence to show that John Pereira's the portion of the Native town of Madras which is close to the General Hospital, is more exempt from diseases of miasmatic origin than any other populous District of this wide-spread town. The reports on the deaths in Madras published by authority of Government, especially those quoted in the margin, seem to show that the deaths from zymotic disease are proportionally fewer in this neighbourhood that in many others. During the last six months of 1862, however, epidemic cholera was unusually prevalent in this vicinity, and the sick in the hospital were not exempted from its influence

For 1860 and 1861.

7. There is no evidence to show that epidemics are of frequent or constant occurrence in the General Hospital. Receiving patients, as it does, from all parts of the town, laboring often under contagious diseases, it is not a matter of surprize that, occasionally, a patient, under treatment for a chronic ailment, may be attacked by cholera, or fever; but such cases are quite exceptional. The matter for wonder is, that they have not occurred more frequently, considering the hitherto objectionable sanitary condition of the Hospital buildings, and defective arrangements for conservancy and drainage.

8. With regard to the out-break of cholera in Her Majesty's 69th Regiment in July last year, amongst the ordinary sick residing in the Regimental portion of the Hospital, I may observe that the disease was prevailing at the time in the immediate neighbourhood, and also that a *possible* cause might be found in the circumstance of the Executive Engineer, to raise the level of the Hospital grounds, having caused to be excavated from the bed of the Cooum, just at the place where the old privy drain debouched, a quantity of soft, muddy soil, which was spread out, and exposed on the dry surface between the river and the Hospital. The sea breezes were no doubt tainted by the exhalation from this filth, and it is a curious coincidence, if not to be considered in the light of cause and effect, that cholera appeared amongst the 69th men, almost immediately on the stirring up of the mud from the river bed, and that the disease ceased upon the cessation of the work in question, and there were only 12 cases. Yet it was remarked at the time by Dr. Blacklock, that the patients, located nearest to the river bed, were not attacked, while the Regimental Hospital, which

was further removed from the nuisance, had the greatest number of seizures by the epidemic; hence it is impossible to state positively whether the local disturbance of the river bed, or the epidemic influence in the neighbourhood, or a combination of the two, caused the outbreak amongst the sick in Hospital.

9. With regard to the general plan and site of the combined General and Regimental Hospitals, I have taken occasion to express my opinion thereon before, and I quote marginally for easy reference what I then submitted to Government. However, were the plan of the building, and its site, as objectionable as those who least approve of them declare, the spacious, commodious and costly edifice, advancing towards completion, cannot now be abandoned—that must be acknowledged on all hands—nor, after the expenditure of so much money, can a separate building for a Regimental Hospital be provided, and, happily the evils, if not susceptible of entire removal, are in a great degree remediable, and on that point I beg most earnestly to repeat my recommendations made in the marginal extract, as to the cleansing, deepening, and narrowing the channel, and embanking the borders of the Cooum river and Cochrane's canal; throwing down the buildings immediately to the east and south-east of the main Hospital building, including the Regimental Surgeon's and sick Officers' quarters; extending the boundaries of the Hos-

"The general plan having been determined on, and the resolution to receive into the Hospital all the classes of sick enumerated in the letter of the Committee appointed to report on the subject,* having been come to, after full deliberation, as it would appear; it may seem mistimed and presumptuous in me to say anything at this stage of the proceedings on the propriety of congregating so large a body of sick† on an area, the disadvantages of which were so very forcibly depicted by the Committee above named, and which are in a great degree irremediable. I cannot reconcile it to my sense of duty, however, in my present position, to be altogether silent on the subject; and I feel compelled to record my sentiments that either the sick of the European Regiment Garrisoning Fort Saint George should have been accommodated elsewhere, or the sick of the Civil population should not have been provided for in this locality.

"It was always considered objectionable that two distinct establishments, the Regimental and General Hospitals, should be within the same enclosure. True notions of Hospital discipline revolt at such an incongruous juxta-position. The discipline and management of the Regimental Hospital must be seriously interfered with; and the term applied to the other moiety of the building becomes a misnomer, its *unity*, an essential attribute of a *General Hospital*, in the true military acceptation of the term, at least, being

* See Proceedings of Government and Order thereon, No. 1,476, 24th September 1859.

†The average daily number of sick has heretofore been about 160; the accommodation to be provided will raise the number to more than three times that number.

entirely obviated, by having an establishment, with an independent head and separate regulations, occupying a part of the very same range of buildings.

"The general plan, however, being determined on, and the buildings considerably advanced, the only thing to be done is to neutralize as much as possible the disadvantages of the position, by throwing down all buildings in the enclosure impeding ventilation; by paying great attention to drainage; by taking care that all excrementitious matters are removed to a distance, and that none find their way into the Cooum; by cleansing by the dredge, if possible, that fetid body of water, and embanking it in the vicinity of the Hospital; and enlarging to the northward the enclosure on which the Institution stands. This latter measure could only be effected by a considerable outlay in the purchase of houses in the town in that direction, levelling them, and throwing the road, and as much space beyond as possible, into the Hospital enclosure. By this measure, too, the high prison like wall on that side, with the wretched guard-room and miserable kitchen, would be removed, and a low wall and railing might be substituted. To obviate as much as may be the disadvantage pointed out of having the Regimental and General Hospitals in the same area, I would recommend that a separate entrance be provided for each, and a 2½ feet wall with railing be thrown across the enclosure to divide the two; the verandahs, also, in the building being partitioned with the same object."

tal enclosure, by taking in the road to the north, throwing down the line of highly objectionable houses in that direction, and forming the road on their present site; together with great attention to drainage and general sanitary conservancy, and these latter points include the recommendations I made on the general condition of Madras in these particulars in my letter* forwarding Dr. Cornish's Mortuary Report for 1861-62.

* No. $\frac{72}{159}$ A. 27th August 1862.

10. My remarks also on the objection to the mixing up in one building the sick of a Regimental Hospital, and of a General Hospital, are already before Government in the above marginally given extract.

11. The expediency of placing Hospitals in town or in the country has recently been the subject of much conflicting opinion amongst professional men at home. It seems, however, to be pretty well established that the superior advantages of pure country air, are more than counterbalanced by the difficulty of access, and impossibility of affording immediate Medical or Surgical aid in cases of emergency; and that Hospitals, to be really useful, must be within reach of the dwellings of the poor of crowded cities. The site of the General Hospital, in this respect, could not be improved. It is within an easy distance of the Fort, the shipping, and all the more populous districts. The disadvantage of having a Hospital at a distance from the town in a tropical climate, where diseases sometimes run their course in a few hours, and the delay of *minutes* in treatment is a

matter of vital importance, must be sufficiently manifest. The situation has the advantage of being freely exposed to the prevailing sea breezes. The condition of the Cooum river, and the proximity of a low class of dwellings and a public thoroughfare close to the Hospitals, are objectionable, no doubt; but these are defects which are capable of remedy.

12. With regard to the improvement of the river bank and the deepening of its bed, I am of opinion that, while the work is in progress, the sick should be removed to some other locality. When the bed of the river is properly covered with water, the exhalations will be very much less offensive and injurious; and it is extremely desirable that means should be adopted to maintain a full body of water in the channel.

13. The Medical College buildings, as will be seen from the enclosed plan, cannot materially interfere with the prevailing sea breezes, which are nearly always southward or northward of east. The plan shows the distances of the College from the Hospital buildings, and the amount of open ground there will be, when the space is cleared of all the buildings which it is determined to remove, among which are the quarters of the Regimental Surgeon, no doubt objectionably situated in every respect.

14. It is of primary importance that a Medical School should be in immediate contiguity to the Hospital wherein the pupils are to be instructed clinically; and its present site, I consider, I have shown not to interfere injuriously with the health of the Hospital inmates. The building is very ill adapted for an Officer's residence, and I think it would be injudicious to carry out that portion of the scheme, which contemplates turning the College into quarters for the Regimental Surgeon;—they should be erected elsewhere; perhaps by extending eastward the block of building now forming the residence of the Surgeon and Physician of the General Hospital.* It is by no means essential that both these Officers should reside on the spot, and the quarter of one of them might be given up to the Regimental Surgeon, the other then drawing his house-rent allowance, and finding his own residence elsewhere.

* It will be seen, however, hereafter that, for reasons assigned, it would be well to demolish this building.

15. Regarding the insalubrity of the Regimental Surgeon's present residence, I subjoin an extract from a note addressed to me by Dr. Barclay, Surgeon of Her Majesty's

43rd Light Infantry, which forcibly represents his own experience while residing there.

"I was laid up the year before last with fever of a very peculiar kind, and which I never doubted was attributable to the effluvia from the Cooum. Every inmate of the house suffered from the same kind of fever, followed by the same eruption and similar prostration. Every servant sleeping about the house suffered from fever at the same time, the only domestic animal doing so, viz., my dog, died. Before this the smell from the Cooum had often been so bad during the night as to keep us all awake. Shortly afterwards I was laid up again with a severe attack of ophthalmia, but since our return one or other has always been sick. I was first laid up with fever; then ophthalmia went over the house; two members of my family have had small-pox. Besides being actually laid up I have suffered very often since we came here from head-aches and unpleasant nervous symptoms, and have been obliged to give up writing in consequence. For this I blame partly the foul air, and I think there can be no doubt that there is evidence enough to condemn this house as unfit for occupation. In 1860 cases of fever were of very frequent occurrence among the patients in Hospital. Last year there were not so many of them; but in August, while there was little fever in Barracks, many men in the venereal wards in the Hospital (those most exposed to the exhalations from the Cooum) were attacked with fever. The only cases of cholera among the men of the Regiment (two) last year occurred in the same wards. I have found sores of all kinds difficult to heal in the Hospital, and have had one or two severe cases of sloughing phagedena, for which I could only account by attributing them to the impurity of the air. The patients often complain of the foul smell which pervades the Hospital during southerly winds."

Now this is strong testimony, which I think it right to record, as affording powerful argument for remedying the sanitary evils complained of, which are capable of being greatly mitigated at any rate; and the demolition of the Regimental Surgeon's quarter would not only do away with a building unfit for occupation, but beneficially open out the space on the side from which the sea breeze blows during the hot season.

P. S.—Since this letter was completed I have received a plan from Colonel Hitchens of the Engineers, showing the General Hospital and its surroundings, the distances, from actual measurements, being laid down in feet.

I have also received, in reply to a request for information as to the prevailing winds, a communication from the Astronomer of Madras, from which an extract is subjoined.

From this latter I have had laid down on the plan the points of the compass, exhibiting the bearings of the Hospital to the prevailing winds, and it is singular to observe that the line of *minimum prevalence* during the south-west monsoon intersects the Medical College, which it has been thought obstructed the access of the sea breeze. Mr. Pogson has stated how very few days in the year the wind blows from due east; but it will be seen that the north side of the College is considerably to the southward of this point, so that the building would not intercept a due easterly wind. In fact it would seem as if the College had been purposely placed where it would not in the least interfere with free perflation.

It will be seen that the *direction of maximum prevalence* during the south-west monsoon presents an uninterrupted open space, not a single object of any elevation beyond Sir T. Monro's statue intervening between the Hospital and the sea.

The north-east monsoon *direction of maximum prevalence* is much shut up, as will be seen by the Plan, by the Surgeon's quarters, a high boundary wall, cook-rooms, guard-rooms, &c., this affords additional strong argument for the demolition of these buildings, and the extension of the Hospital enclosure on this side.

(Signed) ROBERT COLE,

Princl. Inspr. Genl., Medl. Dept.

EXTRACT.

"The wind does not often blow from due east. In 1861 there were only 13 days, and last year 11½ on which the daily mean was from this point. As regards the afternoon sea breeze in April and May it *certainly* does not come from due east, but three and often four points more towards the south. I can positively state this from a mere inspection of the Anemometer tables printed for fifteen years, 1841—1855. The mode of reduction was moreover so clumsy and incomplete, that before I can offer proofs of any opinion I may be called upon to give, the whole must be fresh summed and meaned throughout. It is being done, but will be some months in progress, and of course until *quite* finished results are as utterly unknown as before commencing.

"You may however take the last two years, *which have been*

attended to, as a guide ; and from them we get as follows for the prevalence of due east wind in days :—

	Jany.	Feby.	March.	May.	Septr.	Octr.	Novr.	Decr.
1861.	5	5	1	...	...	...	...	2
1862.	3½	2½	2½	1	½	1	½	...

"North-east and south-east are two largely prevailing directions, the former in the first and last three months of the year ; the latter in the middle six, April to September.

"The direction of decided *minimum* prevalence is about north-west by west ; but as there are two *maxima*, so there must also be two *minima*, and the second of these falls about east south-east. But, as the *maxima* directions are not opposite to each other, the secondary *minimum* borders very closely upon the adjacent lines of greatest frequency."

(Signed) N. R. Pogson.

Observatory, 6*th February.*

(A true Extract.)

(Signed) Robert Cole,
Princl. Inspr. Genl., Medl. Dept.

GARRISON REGIMENTAL HOSPITAL, MADRAS.

Abstract Return showing the total Sickness and Mortality in Her Majesty's Regiments located in Fort St. George, for the years 1860, 61 *and* 62.

	1860 H. M.'s 43rd Regt.	1861 H. M.'s 43rd Regt.	1862 H. M.'s 69th Regt.	Total of three years.
Average Annual Strength.....	668	936	915	2519
Total Admissions from all Diseases	1678	1259	1604	4539
Do. Deaths do. do. ..	8	5	20	33
Average daily sick.....	52	65	84	201
Per centage of Admissions to Strength.....	250·8	134·5	174·2	180·1
Do. Deaths do. ...	1·19	0·53	2·18	1·31
Do. do. to Admissions.	0·47	0·39	1·24	0·72

(Signed) W. R. Cornish,
Secy., Princl. Inspr. Genl., Medl. Dept.

Office of Principal Inspector General,
Medical Department,
Fort St. George, *February* 1863.

GENERAL HOSPITAL, FORT ST. GEORGE.

Abstract Return showing the total of Admissions and Deaths, and per centage of Deaths for the three years 1860-61-62.

Description of Sick.	1860-61-62.		1860-61-62.
	Admissions.	Deaths.	Per centage of deaths.
Military European.....	1,899	73	3·84+
„ Native... Fighting and Non-Fighting.	2,128	68	3·1 +
Civil European.....	3,346	97	4·13+
Total...	6,373	238	3·58+

(Signed) A. BLACKLOCK,
Physician, General Hospital.

MADRAS GENERAL HOSPITAL, *29th December* 1862.

ORDER THEREON, 10*th June* 1863, *No.* 643.

The foregoing letter and the returns furnished with it will be submitted for the consideration of the Secretary of State, with reference to his Despatch of the 8th October last.

2. These returns, as Mr. Cole observes, do not show an amount of sickness and mortality attributable to local causes, which would prove that the site of the General Hospital is unhealthy.

3. As to the outbreak of Cholera which occurred in the Regimental Hospital in July 1862, it is evidently impossible to determine with certainty to what cause it is to be ascribed. The disease was prevalent at the time in the immediate neighbourhood of the Hospital, as it was in many other parts of Madras. It is possible that the immediate cause of the outbreak may have been the excavation of the bed of the Cooum, to which reference is made in paragraph 8 of Mr. Cole's letter; though this scarcely consists with the fact that the patients located nearest the river were not attacked. On the whole, it would appear that epidemics are not of frequent occurrence in the General Hospital.

4. His Excellency the President and the Members of Go-

vernment inspected the Hospital thoroughly a few days ago, and came to the conclusion that it is a building admirably adapted to its purpose. Nothing can be more airy and cool than the wards of the new building; and those of the old, although, being on the ground floor, they do not feel the action of the breeze so fully, are yet, from their construction, remarkably well ventilated. When the whole range is completed and some few alterations in the minor detailed arrangements are carried out, the Governor in Council does not hesitate to say that it will be as convenient a building for 700 patients as can be seen anywhere.

5. With reference to the objections made to the site, the Governor in Council is constrained to say that they appear to him very much exaggerated. That they are purely theoretical, the report of the Principal Inspector General proves satisfactorily. When the building was inspected by the Members of the Government, the sea-breeze was blowing full upon it, with nothing to intercept it, except at one corner, where the house of the Regimental Surgeon and the Sergeants' Quarters interpose between it and the eastern end of the hospital. These buildings will be removed, and then the breeze will have its full action upon the whole of the southern and south eastern faces of the buildings.

6. The measures to be taken for cleansing the Cooum river and keeping up a sufficient supply of water in it throughout the year, are now in course of being investigated in the Department of Public Works; and the Governor in Council does not anticipate any difficulty in maintaining the water in the branch which goes in rear of the Hospital at a fixed level. No time will be lost in carrying out the project when its details have been fully settled.

7. The removal of the houses in John Pereira's, and widening of the road north of the Hospital, is less urgent, and would certainly involve a very considerable expense. It is desirable, however, that the probable cost should be ascertained; and the Superintending Engineer of the 4th Division will be instructed in the Department of Public Works to prepare, in communication with the Principal Inspector General of the Medical Department and the Collector of Madras, an estimate of the expense of removing the buildings immediately to the north of the Hospital for the space of 40 feet, and widening the road. The estimate should also provide for the removal of the buildings at present occupied by the Regimental Surgeon, and the Serjeants' Quarters.

8. Arrangements should be made for closing in the ground between the Hospital and the bank of the river by a high open fence, so as to keep people out of the ground, which should be laid out and planted with shrubs and flowers ; it would add very much to the comfort of the patients and to the appearance of the Hospital, if the eye could rest upon a well-arranged garden between the building and the river.

9. The Governor in Council is not aware that there are any of the internal arrangements which cannot be modified at a very trifling expense to meet the views of the Medical Officers. Water for drinking might be laid in from the main conduit leading to the Fort—means of pumping up water for baths, &c., can be provided ; but all these matters will be dealt with when the general scheme for supplying the town with water is under consideration.

10. The Medical College buildings do not in any way interfere with the ventilation of the Hospital. These buildings must be in the immediate vicinity of the Hospital, and they could not be better placed.

11. The Principal Inspector General and the Inspector General of Hospitals will be called upon to state specifically what additions and minor changes and arrangements they would wish made to, and in, the new Hospital buildings, in order that the necessary instructions may be issued at once in the Department of Public Works.

12. On full consideration of the subject, it is the deliberate opinion of the Governor in Council that when the several measures above referred to, shall have been carried out, there will be no valid ground of objection against the position or arrangements of the General Hospital. As he has already observed, it appears to him that, even as matters now stand, the disadvantages of that position have been much exaggerated in the representations which have been laid before the Secretary of State. The Hospital has the great advantage of being fully exposed to the prevailing sea breezes. It is on the southern extremity of the town and within easy distance of the Fort, the Shipping, and all the more populous districts ; and this, as the Principal Inspector General observes, is a matter of vital importance in a climate where disease runs its course so rapidly.

The Authority of Medical Subordinates.

From the *Sindian*, June 8.

On the 15th December last, the Commander-in-Chief in India submitted for the opinion of the Right Honorable the Judge Advocate General of the British Army, London, the following subject:—In all the Indian armies there is a class of Warrant Officers who have never been soldiers, namely, Apothecaries, Stewards, and Assistant Apothecaries of the Subordinate Medical Department, but who are amenable to Military Law, under the provisions of the Indian Mutiny Act. These persons enter the service under appointment of the Commander-in-Chief of the Presidency as Hospital Apprentices, and after passing a necessary examination, are promoted by Government, to the rank of Assistant Apothecary, receiving a Warrant just the same as the Deputy Commissaries, Assistant Commissaries, Deputy Assistant Commissaries, Conductors and Sub-Conductors of the Ordnance, Public Works, and Commissariat Departments, each of whom rises from the rank of a Private Soldier to that of Sergeant, before promotion to the Warrant grade. In June 1862, at Nusseerabad, Apothecary Lawrence, a Warrant Officer, ordered Hospital Sergeant Piggins into arrest in a matter arising out of Hospital discipline, when the Sergeant refused to obey. An opinion on the case was given by the Judge Advocate General of the Bombay Army in the following words:—

"It would appear that Sergeant Piggins was attached to the Hospital, and that it was in a matter connected with the discipline of the Hospital, that he was ordered into arrest by Apothecary Lawrence who, being a warrant officer, was not only superior in rank to Sergeant Piggins, but clearly his superior officer in matters connected with the discipline of the Hospital; and therefore, in my opinion, a lawful authority when he ordered the Sergeant under arrest."

The Judge Advocate General of the British Army in his reply states that he fully concurs with the Judge Advocate General of the Bombay Army, in thinking that any Apothecary or Hospital Steward in the Indian Forces may lawfully order an Hospital Sergeant into arrest for an offence directly connected with Hospital duties.

Rights of Medical men in Government employment, to engage in Private Practice.

In the Court of the Commissioner Tenasserim Division of British Burmah, Mr. John C. Harper, Surgeon and Licentiate in Maulmain, complained against Apothecary Samuel Sausman of the General Hospital, Maulmain, that he indulged in private practice, and he prayed the Court to pass such an order as would enable him to judge what opposition he might expect. The Court called upon the Civil Surgeon for a report, and that official fully explained away the improper conduct imputed to Mr. Sausman in Mr. Harper's petition. Lieut. Col. Fytche finally disposed of the case in the following terms:—

"With regard to the competition complained of by Petitioner, the Court believes that the Government either in this country or in England have no objection to their servants in the Medical department having private practice, as long as it does not interfere in any way with their Public duties, or that the knowledge they possess should not be 'made available for the benefit of the community as well as the personal advantage of' their servants 'themselves.'

"The Court therefore objects to passing any order debarring Mr. Samuel Sausman from private Medical practice, and considers that the community of Maulmain can be very safely left to make their own selection of Medical advisers, whether such may be in the Government Service or not, without any interference from this Court."

Pensions to Uncovenanted Medical Officers.

FINANCIAL DEPARTMENT.

No. 2375, *Fort William, 4th June* 1863.

Notification.—The following extract from a Despatch from the Right Honorable the Secretary of State for India, No. 61, dated 16th April 1863, is published for general information:—

"Para 15. Uncovenanted Medical Officers may be admitted to the benefits of the Uncovenanted Service Pension Rules as recommended by your Government."*

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* Letter dated 15th January 1863, No. 11.

Civil Dispensaries: support to be given by the State and by the Local Public respectively.

NOTIFICATION.

Fort St. George, 11*th June* 1863.

The Government regret to observe that their previous orders regarding the amount of aid which they consider should be given by the State and by the local public to the Civil Dispensaries established in the different Districts of the Presidency, have produced but little effect.

2. They remark with pleasure, indeed, the honorable exceptions to be made in favor of the inhabitants of Madura, where a liberal subscription of 50,000 Rs. for the endowment of the Civil Dispensary and Lying-in-Hospital of the town, has made those institutions already independent of Government support;—and of Chingleput, where considerable gifts of land have been made to the Civil Dispensary for the same purpose; but these exceptions only make the backwardness of other Districts more apparent.

3. The Government consider that the time has now arrived when the inhabitants of the Districts, where the Civil Dispensaries have been hitherto entirely supported by the State, should be made to understand distinctly that while the Government will continue to supply the Medical aid and the Medicines, they expect the local public to provide the necessary funds for the food, clothing, and attendance required by their own sick poor; and that where this is not done, they will close the Dispensaries altogether.

4. Civil Dispensaries are established solely for the benefit of the people, and if the inhabitants of a District desire to retain the advantages of an Institution for Medical relief amongst them, they must contribute to its support.

5. The Government hope that there is no District in this Presidency where this will not be done, and that this last warning will render the extreme measure of closing any Dispensary unnecessary. They desire that the Revenue Officers and Civil Surgeons of the Districts, where the maintenance charges of the Civil Dispensaries are still defrayed by the State, will take care that the purport of this order is clearly understood by the inhabitants, and will report the result without delay.

By Order,
A. J. Arbuthnot,
Chief Secretary.

Applications for Leave of Absence from Military and Medical Officers in Civil Employ.

FINANCIAL DEPARTMENT.

Fort St. George, June 11th, 1863.

His Excellency the Governor in Council directs the publication of the following General Order, for the information and guidance of the Officers concerned :—

Considerable inconvenience having been experienced from the mode in which Military and Medical Officers in Civil employ at present submit applications for leave of absence, His Excellency the Governor in Council directs that henceforward all such applications shall be accompanied by a Memorandum showing the last occasion of the Officer joining his Department or appointment and the nature of the leave last enjoyed by him.

By Order.

(Sd.) A. J. ARBUTHNOT,
Chief Secretary.

BOOKS RECEIVED.

1.—Hand-book of Uterine Therapeutics, by E. J. Tilt, M.D. ..... Churchill, London.
2.—On a Volumetric Process for the Analysis of Waters. By Ed. Nicholson, F.C.S., Staff Assistant Surgeon. *(Reprinted from the Journal of the Chemical Society.)* ..... London.
3.—Deaths in Madras during 1861 ..... Govt. Press, Madras.
4.—On Rupture, Inguinal, Crural, and Umbilical; their Anatomy, Pathology, Diagnosis, Cause and Prevention; with new methods of effecting a Radical and Permanent Cure. By J. Wood, F.R.C.S. ..... Davies, London.
5.—Parturition without Pain. By Dr. Townley, 3rd Ed. do.
6.—Clinical Researches on Auscultation of the Head. By M. Henri Roger, M.D., translated by Dr. A. Meadows ..... Renshaw, London.
7.—Transactions of the Epidemiological Society of London, Vol. I. Part III ..... Davies, London.
8.—The Progress of Ophthalmic Surgery, from the invention of the Ophthalmoscope (in 1851) up to the present time. An Oration by J. Z. Lawrence, F.R.C.S., M.B ..... London.
9.—Transactions of the Medical and Physical Society of Bombay, 1862 ..... Byculla Press, Bombay.

THE MADRAS

QUARTERLY JOURNAL

OF

MEDICAL SCIENCE.

NOVEMBER 1, 1863.

PART I.

ORIGINAL ESSYAS.

ART. IX.—*Contributions to Ophthalmic Medicine and Surgery.* By GEORGE SMITH, Esq., M.D., Superintendent of the Eye Infirmary, Madras, &c., Professor of Ophthalmic Medicine and Surgery, Madras Medical College.

I PROPOSE under the head of "Contributions to Ophthalmic Medicine and Surgery" to bring before the profession, from time to time, abstracts of such cases of interest as come under my care at the Eye Infirmary, accompanying the details with clinical remarks and general observations.

Two well marked instances of destructive disease of the retina in Europeans having presented themselves since I assumed charge of the Eye Infirmary, I have thought it might be useful to record the cases in abstract, in order that attention may be drawn to the insidious character of certain pathological changes which might readily fail to attract notice, until all hope of relief by remedial measures had come to an end. Without anticipating details I may here mention, that posterior internal ophthalmia having its focus in the retina, may commence and progress with little or no pain, with little or no intolerance of light,

and with little or no pathological change visible to the naked eye, the only symptom of its existence being the more or less rapid impairment of vision of the organ affected.

Case 1.—Erysipelatous Ophthalmitis.

Recurrent erysipelas of the face and head; vertigo; dimness of vision; loss of sight of the left, and serious impairment of the vision of the right eye; ophthalmoscopic evidences of general ophthalmitis; recovery of the right eye; total loss of the vision of the left.

A. M., Gunner, 4th Battalion 17th Brigade Royal Artillery. Æt. 24. Constitution sound; Habits temperate.

This patient was admitted to the Artillery Hospital St. Thomas' Mount on the 1st December 1862, suffering from erysipelas of the face, head, penis and scrotum. General desquamation followed. He remained in hospital 19 days. Four days after discharge, he was re-admitted with return of the symptoms and on the 8th day was again discharged. On the 1st of January 1863, he was a third time admitted with the same disease, attended with dimness of vision, vertigo, and deep-seated pain in both eyes. On the 5th of January, he observed that he had lost the sight of the left eye. The medical officer in charge, a skilful oculist(1), submitted him to ophthalmoscopic examination and reported as follows: "Vitreous humour turbid, containing quantities of pigment; lens opaque; condition of fundus cannot be ascertained." On March the 21st he was transferred to the Eye Infirmary.

Ophthalmoscopic Examination, and Examination by Oblique Illumination.

Left Eye.—Iris discoloured; of a greenish yellow color; one point of anterior synechia; under atropine instillation, the inner and upper margins of the pupil dilate freely, but the lower and outer are fixed; shape of the pupil irregularly ovoidal; reflection of the interior of the eye a bright red; pigment patches and adhesions connect the iris with the anterior capsule of the lens; a narrow semi-circular opaque band of lymph, not attached to the iris, occupies the anterior and nasal side of the capsule. The lens is itself quite transparent. The vitreous humour is hazy and contains

(1) Dr. Wm. Johnston, H. A., Bangalore.

numerous black pigment masses. Fundus of the eye invisible; optic nerve cannot be detected; vision of the eye quite gone; no perception of specular light. He says, however, that under favorable circumstances he can distinguish the sudden difference between shade and bright light, when an object is passed before his eye. Consistence of the eye-ball rather less than natural. No active disease appears to be present in the organ.

Right Eye.—Pupil dilates well under the influence of atropine; no adhesions. The examination could not be proceeded with, owing to the irritability of the retina under the specular light[1]. With the right eye he can read No. 6[2] with difficulty at $4\frac{1}{2}$ inches, and No. 8 at 6 inches. When he stoops he suffers from vertigo, and feels the blood rushing into his eye, making every thing red and dim. Similar sensations are felt when he rises suddenly or walks quickly. With this eye he sees objects up to 40 yards distinctly, recognizing both their form and color; beyond this distance every thing appears yellow; beyond 80 yards, he has no distinct vision.

2nd April.—With the right eye he can read No. 6 with ease, but cannot decipher No. 4.

7th.—The ophthalmoscopic examination of the left eye was repeated, and the fundus oculi was so far visible, that the locality of the optic nerve could be traced, though with difficulty, owing to the intervening masses of pigment arising from hæmorrhagic or inflammatory effusion into the vitreous humour.

17th.—To-day the range of vision of the right eye was tested according to Graefe's method[3], and the field of vision of the retina was proved to be unmutilated.

25th.—He can read No. 6 at 7″, No. 8 at $7\frac{1}{2}$″, No. 12 at 10″, No. 20 at 37″ with the right eye.

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(1) In active internal inflammation, the eye could not be subjected to ophthalmoscopic examination, but where there is a tolerance of light, as in cases where the disease is sub-acute or chronic, a careful and complete but rapid exploration will do no harm, and may set at rest the question of diagnosis.

(2) The test types employed are those in use in the Royal London Ophthalmic Hospital, Moorfields. Test types on the same principle, as far as type can be obtained, are prepared in Tamil and Teloogoo for native patients in the Eye Infirmary.

(3) Vide "Cases illustrating various forms of mutilation of the field of vision," by J. W. Hulke, Ophthalmic Hospital Reports, vol. 3, p. 242.

15*th June*.—Can read No. 4 at 5″, No. 6 at 8″, No. 8 at 12″. Test lens No. 12 biconvex[1], improves vision; higher powers improve it still more distinctly. Tested by Professor Longmore's method[2], the following results are obtained. He can count the dots equal to No. 8 (small pica) at 5″; No. 10 (pica) at 8″; No. 12 (great primer) at 10″, and the miniature bull's eyes = ·12 inch diameter at 16″.

26*th*.—This morning an erysipelatous blush appeared on the lids and cheek of the right side of the face, causing him much alarm and distress; last night there was heavy rain, with wind and lightning.[3] This reappearance of the disease was met promptly and the morbid action gave way without difficulty.

4*th July*.—Erysipelatous action has come to an end, and the eye remains uninjured. With the right eye he can read No. 4 at 7″, and with the help of biconvex No. 80, he can read No. 1 at 6″. The yellow colouring of mid-distance objects is also subsiding. General health good. No improvement in the left eye.

22*nd*.—Can read No. 4 at 8″ and No. 6 at 11½″.

28*th*.—Proceeded to England.

Summary of Treatment at the Eye Infirmary.

Counter-irritation; liquor hydrargyri bichloridi in decoction of cinchona; good diet and exercise; cold douche to the head. The erysipelatous attack was treated with caustic limitation and repeated application of the tincture of the muriate of iron to the surface. The usual evacuants were administered, followed by doses of the tincture of the muriate of iron, and of the extract of Belladonna combined

(1) The test glasses used are those of Graefe and Jaeger, in use in London and over the Continent generally. They can be obtained from Pillischer, New Bond Stret, London.

(2) Vide "Statistical, Sanitary and Medical Reports of the Army Medical Department for 1860," p. 462 et seq. I have found these sets of dots corresponding with Jaeger's test types very useful. They can be used when patients read with difficulty or not at all.

(3) The influence of changes of the weather upon the general system both in health and disease is well known. In the case of disease of the eye, and more especially after operations on that organ, the effects are often at once apparent, in the sudden incursion of inflammation and in the conversion of a promising into an imperilled or hopeless case.

with carbonate of iron, pushed to mydriasis. Subsequently, potass diuretics and quinine wine were found useful in restoring the general health.

Case 2.—Erysipelatous Ophthalmitis.

Recurrent erysipelas of the face and head; pain in the eye-balls and head; gradual impairment of vision; total loss of sight of the right, and gradual recovery of that of the left eye.

H. B., Gunner, 4th Battalion 17th Brigade Royal Artillery. Æt. 24. Constitution sound; habits temperate.

When at Warley in 1861, this patient had an attack of erysipelas of the face and head, which lasted 14 days, during which he suffered from pains in the eye-balls and head, more especially in the occiput; his eyesight was unimpaired when he left hospital. In August 1861, when on his voyage to India, he had a second attack of erysipelas of the face and head, which lasted a fortnight, and he again suffered from pain in the head and eye-balls. No impairment of vision followed this second attack, though, after its subsidence he experienced slight intolerance of light and some lacrymation. In October 1862, he had a third attack of erysipelas of a very mild kind. He had pain of the eye-balls, and noticed, for the first time, impairment of vision. Within three months he lost the sight of the right eye, and the vision of the left became seriously imperilled. He was transferred to the Eye Infirmary on the 25th May 1863.

Ophthalmoscopic Examination.

Right Eye.—After the instillation of atropine (gr. 3 ad. ℥) the fundus oculi lights up indifferently; optic nerve indistinct, irregularly oval, pink; veins large but defined with difficulty; retina vascular and opaque; no cupping of the optic nerve; choroid coat not visible through the retina; no effusion in, below, or upon the retina detectable. He has no perception of the specular light.

Left Eye.—Fundus oculi lights up badly; optic nerve irregular in outline, ovoid, pink; retina congested; arteries and veins of retina distinct; no deposit in or upon the retina, and no effusion below it.

The pupils of both eyes are fully dilated; no synechiæ; consistence of eye-balls normal; he has aching pain in the

balls of the eyes. The external appearance of both organs is that of perfect health. He is not addicted to spirits, tobacco, or other intemperate habits. With the left eye he can decipher (he has never learned to read) No. 1 at 7″, but with the right he cannot distinguish day from night. He has uneasiness in the right eye, none of any consequence in the left. The right pupil acts sluggishly under the direct stimulus of light, but responds readily to the sympathetic stimulus of light acting upon the left retina. The left pupil acts promptly.

15*th June.*—He suffers occasionally from circumorbital uneasiness, sometimes rising to pain.

30*th.*—He was removed to the General Hospital in consequence of an intercurrent attack of fever. During his month's residence in the Eye Infirmary the sight of the left eye had improved, and this improvement was progressing steadily. The vision of the right eye had totally failed.

Summary of the Treatment.

Counter-irritation; bichloride of mercury in decoction of cinchona; iodine pigment to the brow and temples; grey powder combined with quinine until mouth affected; hydriodate of potass with decoction of cinchona; good diet; daily exercise; Belladonna pigment, &c.

REMARKS.

These two cases have some striking points of resemblance. The subjects of both were young, hale, and apparently sound-constitutioned men, not addicted to bad habits. In both erysipelas attacked the head and face; in both the attacks were recurrent; in both the first two invasions of the disease followed each other rapidly, and the third, after the lapse of one year; in neither case was there any obvious exciting cause; in both, the implication of the eye took place in consequence of the third attack, the symptoms being moderate pain in the eye-balls with impairment of vision. In both, the result has been loss of sight of one eye and serious, though fortunately transient injury to the vision of the other. In both, the retina appeared to be *the focus of disease.* Both cases came under my care when morbid action had nearly, if not quite come to an end in one eye, and was gradually subsiding in the other, consequently at a stage when but little influence on the result could be exercised by medical treatment.

That grave ophthalmitis may occur in consequence of plague[1], typhus fever[2], puerperal disease and phlebitic inflammations[3], is a fact abundantly recognized by medical men. Its occurrence, however, coëtaneous with, and consequent upon erysipelas of the head and face, is not so frequently alluded to in the authors I have consulted. Erysipelas of the head and face has always been regarded as dangerous, in consequence of the risk of extension of the disease by continuity or by metastasis to the brain and its membranes; the former being the more general mode of implication. That erysipelas is at times erratic is well known, and that the eyes have been included among the organs to which the metastasis may take place, is a pathological fact long known to the profession[4]. It appears to me, however, that the affections of the lids and conjunctiva so common in erysipelas of the head and face, with the abscesses thence resulting, have attracted the attention of medical men more than those more serious

(1) Alluding to the great plague of Athens, Thucydides remarks, "or, if any survived these greatest changes, yet the disorder seized on the extremities, and there left its mark, making its attacks, for instance, in the fingers or the toes, &c., and many with the deprivation of these, and some even with that of their eyes, escaped with their lives."

(2) An admirable essay on Inflammation of the Eye following Fever was written by Dr. Jacob, of Dublin, and published in the Transactions of the Association of Fellows and Licentiates of the College of Physicians in Ireland for 1828. An abstract of the paper is found in his work on "Inflammations of the Eyeball," page 58. Dr. Mackenzie, of Glasgow, described the same disease subsequently under the name of "Post Febrile Ophthalmitis." Dr. Anderson of Glasgow has given an elaborate account of the same disease.

(3) Dr. Jacob, in his valuable work above quoted, has an admirable chapter "On Phlebitic and Puerperal Inflammation of the Eye," in which he quotes cases from Mr. Arnott's paper (Transactions Medico-Chirurgical Society of London for 1829, Vol. XV) "On the Secondary Effects of Inflammation of the Veins." Instructive Cases from Mackenzie, Bowman, Marshall Hall and Higginbotham are also referred to. Puerperal inflammation of the eye has been long known; perhaps the earliest case on record is that quoted by Dr. J. Y. Simpson, from "La pratique des Accouchmens, par Paul Portal, Paris, 1685," Vide "Obstetric Memoirs and Contributions," Vol. I. p. 761. The case was one of placenta previa in which Portal removed the presenting placenta, turned the child and delivered. The patient had suffered much from loss of blood; puerperal fever set in, but she ultimately recovered; "three weeks after her lying in," says Portal, "she lost the sight of one of her eyes by a violent defluxion, which by all the art that could be devised, was never removed thence." Then follows a bit of humoral pathology, "the cause of this disaster I attribute to a sharp viscid and bilious humour, contained in the veins, which being put in motion by the violence of the pain this woman suffered during her labour, and the anxiety she laboured under, was carried upwards and settled in her head."

(4.) "Ita a facie in genitalia sæpe ruit erysipelas, quod jam intellexerat Hippocrates, ab aurium posticâ parte ad articulas fluxisse vidi, ab his in oculos."—Sorry de Morb. Cut. 4to p. 195.

affections of the organ illustrated by the cases I have just detailed. Violent and destructive inflammations of the whole ball are minutely recorded in Medical works, as the results of post febrile, puerperal and phlebitic inflammations, but the intimations of erysipelatous ophthalmitis are of the most scanty description. Dr. A. T. Thompson gives a case of Erysipelas of the head and face with head complication and ophthalmia[1], but it appears to me that the disease was one involving the palpebræ and palpebro-ocular conjunctiva alone, and in which the deeper structures of the eye had escaped injury. Dr. E. Wilson does not allude to the ophthalmic complications of erysipelas, nor does Dr. Mason Good. I cannot find any reference to Ophthalmitis in connection with Erysipelas in Dr. Copland's great work, beyond his brief allusion to Erysipelatous Ophthalmia, Vol. I, p. 866, and his quoting Piorry as advancing the opinion, that erysipelas of the head and face at times extends to the cellular tissue of the orbit. Mackenzie quotes a case of Piorrys, —probably the same as that referred to by Copland,—in which small deposits of pus were found in the fatty cellular membrane around the optic nerve, and in that covering the floor of the orbit, chiefly towards its inner wall. These cases, however, are examples of the extension of the disease to parts within the orbit, but still external to the eye-ball.

Under the head "Idiopathic Ophthalmitis" Dr. Mackenzie observes, "that ophthalmitis occurs as a consequence of certain eruptive fevers, such as measles, small-pox, scarlatina and typhus." In his chapter on "Phlebitic Ophthalmitis" he says, "Phlebitis produced in erysipelas or diffuse cellular inflammation, has been known to terminate in ophthalmitis." Again, he remarks, "the disease (*i. e.* ophthalmitis) begins slowly and insidiously in some cases, suddenly and severely in others; one eye or both may be affected; sometimes the inflammation seems to commence in the ocular conjunctiva, at other times it proceeds from the orbital tissues. *In many cases the retina appears to be the focus of the disease*[1].

(1) Vide "Thomson on the Skin." p. 105, Case 14.

(2) Dr. Jacob agrees with Mackenzie on this point; he says p. 58, of his work "On Inflammations of the Eye-ball," when speaking of "post febrile ophthalmitis," "I am unwilling to apply the term iritis to this affection, because I do not believe that the iris is the part primarily or exclusively attached; but on the contrary, that all the internal parts of the eye participate in the inflammation, especially the retina."

The disease (inflammation of the retina), says Dr. Jacob, op. cit. p. 225, is often mild and insidious in its approaches, and marked more by defective vision than by symptoms of inflammation."

In M.'s as in B.'s case the eyes became implicated during the actual attack of the erysipelas of the face and head, at a time when pain in the head was present, and, in one of the two, vertigo also. The external inflammation, the internal derangement of the cerebral circulation, and the implication of the deep structures of the eye being so many concatenated symptoms of the general disease of the blood giving rise to the erysipelas. In both instances the retina was the focus of the disease; in B.'s case the morbid action was apparently confined to that structure; in the case of M., however, there existed pathological proofs that the morbid action had extended to the vitreous humour and capsule of the lens and iris, leaving the other coats and tissues of the eye comparatively uninjured. The retina in B.'s case had undergone extensive disorganization, in consequence of which the function of one eye was totally lost, yet all this retinitis progressed, without any of that severe pain or photophobia, which we are led to expect as the concomitants of acute and sub-acute retinitis. The same remark applies also to M.'s case. Dr. Mackenzie, an oculist of large experience and learning, explains this; he says, "no pain is experienced (in retinitis) unless the inflammation extends to other textures of the eye." The retina is an organ of *special* not of *common* sensation, and the effect of inflammation upon it is to exalt or diminish its special function, rather than to produce pain—a phenomenon dependent upon the nerves of common sensation. When, however, the morbid action extends to the choroid or to the vitreous humour, then the disease manifests its presence by pain. In the cases detailed, M. suffered from pain more severely than B. did, and this is explained by the more extended inflammatory action, as proved by the present condition of the iris and vitreous humour. In neither case was there much photophobia. Speaking of retinitis, Travers in his Synopsis, (p. 137) remarks: "It is an error to suppose that intolerance of light is a sign of this affection, as is clearly proved in strumous ophthalmia, in which, though the intolerance is in excess, the retina is uninjured." Intolerance of light depends most probably upon a reflex action on the ciliary muscle which is supplied by the 3rd and 5th pairs of cerebral nerves, and not upon any hyperæsthesia limited to the retina itself. M. and B. are both young men. In writing of "Post Febrile Ophthalmitis," Dr. Jacob says, "my experience leads me to believe that this af-

fection occurs much more frequently in young than in old persons."

From a review of what has been advanced we may deduce the following considerations—

1. That retinitis or *posterior internal ophthalmitis* may occur in consequence of erysipelas of the head and face.

2. That the young are not exempt from this serious complication.

3. That such ophthalmitis may have its *focus in the retina,* and be either confined to that structure or extend to the neighbouring tissues.

4. That severe pain and intolerance of light indicate that other structures besides the retina are implicated.

5. That, when the retina alone is implicated, the most marked symptom of the disease consists of impairment of vision, sudden or gradual.

6. That such retinitis, if severe, may lead to total loss of vision, but that, should the disease be arrested the damaged eye has a fair prospect of being restored to usefulness.

7. That erysipelatous attacks may recur, and that eyes which have escaped the earlier may suffer under subsequent invasions of the disease.

8. That in erysipelatous ophthalmitis the eye *externally* may give no indication of the serious pathological changes going on in its interior.

Considerations such as these should lead us to watch carefully cases of erysipelas of the head and face, and should rouse our anxiety at any moment, if vertigo, frontal pain and dimmed vision supervene, however healthy externally the affected eye may appear; they should lead us also to prosecute diligently the treatment, not only of the local but also of the blood disease; putting us on our guard in cases of recurrent attacks, and leading us to an early examination of the interior of the eye when suspicious impairment of vision occurs. Finally, a consideration of both cases above recorded cheers us with the hope, that time and treatment may do much to repair the injury of a partially damaged eye, though they may fail to restore sight to one more seriously implicated.

Cases of Amaurosis.

1*st Series.*—Exhibiting indistinct evidences of antecedent inflammatory action.

Case 1.

Gnanapergasum—Hindoo, Æt. 26, admitted 6th July 1863.

Abstract of Case.—In February last (being at that time in Mauritius) he suffered from occasional giddiness; one severe fit ending in insensibility, lasted ten minutes, after which he observed some impairment of vision. Subsequently for two days he suffered from fever and headache. During some weeks he had repeated attacks of cephalalgia, the pain being specially severe in the temporal regions; his sight gradually failed, and at the end of five weeks he found himself totally blind of both eyes. Eyes amaurotic; pupils fixed. Habits said to be temperate, though he admitted having frequently partaken of spirits.

Ophthalmoscopic Examination.

Right Eye.—Fundus oculi lights up with some difficulty; floating bodies are perceptible in the vitreous humour, which dull the fundus; optic nerve small, slightly irregular in outline; arteries mere threads; veins enlarged and slightly varicose; retina anemic; choroid coat visible, but not distinctly; no effusion into or beneath the retina.

Left Eye.—Fundus oculi lights up, but not clearly; vitreous humour hazy; optic nerve as in the right eye; retina more anemic and transparent than that of the right eye; choroidal vessels distinctly seen; no effusion into, upon, or beneath the retina. Vision of both eyes totally lost; no perception even of specular glare. Pupils dilated well under atropine.

Case 2.

Manuel, Hindoo, Æt. 36, admitted 1st July 1863.

States that six years ago his sight began to fail, and that for the last five months he has totally lost the vision of both eyes. Two years before the impairment of vision commenced, he suffered from an attack of paraplegia. He is still paraplegic, walks with great difficulty, and requires support in doing so. He confesses to having been the victim of dissipated habits. Has had syphilis, but denies having been addicted to any *specially* exhausting habit. Both eyes look amaurotic; pupils fixed; no trace of present or past morbid action visible externally. General health pretty good.

Ophthalmoscopic Examination.

Right Eye.—Optic nerve obliquely oval[a]; very white; slight venous vascularity; retina opaque close to the optic disc, and in patches also over the periphery[b]; at these spots the choroid coat is very indistinctly visible; elsewhere the retina is anemic and transparent; the choroid is clearly seen; humours a little turbid; pigment tissue of the choroid atrophied.

Left Eye.—Presents the same appearances as the right; the humours, however, are more transparent. Vision of both eyes totally lost; no perception even of specular glare.

2nd Series.—Exhibiting no evidences of present or antecedent inflammatory action.

CASE 3.

Moonesawmy, Hindoo, Æt. 35, admitted 13th June 1863.

Complains of progressively rapid failure of the sight of both eyes. Distant objects are seen very dimly, and even near objects are made out with difficulty. At 20 yards distance he can just see a white object, the size of a man, against a dark wall. He could not tell that a thick pole held two feet from his eye, was of bamboo. He cannot count the miniature bull's eyes ·12 of an inch in diameter; they appear to him blended into one. The eyes look amaurotic; pupils are dilated; no vascularity or remains of former disease visible. He observed his sight begin to fail some six months ago, both eyes becoming affected at the same time. Before the impairment of vision he had suffered, for some months, from frontal and temporal headaches; the pain was of a throbbing character. He has not had epileptic fits; has been addicted to habits of intemperance; is otherwise in sound health.

Ophthalmoscopic Examination.

Right Eye.—Optic nerve anemic, atrophic, circular and small; resembles a highly polished disc of ivory with a silvery lustre; vessels very small; retina anemic and transparent; details of the choroid distinctly visible. Humours transparent.

Left Eye.—Appearances as in the right eye.

(a) In the opinion of Mr. Hulke a transversely oval disc is "never met with except in disease." Vide "On the use of the Ophthalmoscope," p. 36.

(b) These were probably syphilitic patches.

CASE 4.

Mahomed Zuffer, Mahomedan, Æt. 50, admitted 28th April 1863.

States that he lost the sight of both eyes three years ago; his vision became impaired gradually, and in both eyes at the same time; during this progressive failure of sight, he neither suffered from pain in the eye-balls nor in the head. Both eyes look amaurotic; no external evidence of disease; pupils dilated and fixed; lenses slightly discolored.

Ophthalmoscopic Examination.

Right Eye.—Fundus oculi lights up well; humours quite transparent, though the lens is a little discolored; optic nerve transversely oval, and slightly irregular; slight venous congestion of the disc, which is otherwise anemic; retina very anemic and transparent; choroid very distinctly seen; choroidal vessels plainly marked out; pigment layer atrophied, and pigment of the stroma somewhat deficient, as shewn by the comparatively light color of the inter-vascular spaces. No evidences of inflammatory action past or present.

Left Eye.—Fundus oculi lights up well; optic nerve perfectly circular and white, like polished ivory; choroidal ring very distinct around the disc; retina anemic; other details correspond with those observed in the right eye. Loss of vision of both eyes complete.

CASE 5.

Gopaul, Hindoo, Æt. 40, admitted 8th April 1863.

Right eye shrunk and atrophied; probable cause of its loss, syphilis. Left eye natural in appearance, but he complains of impairment of vision, which commenced within the last month; he has no pain of the eye. States that he can see better during the day than in the evening, though bright light or glare diminishes his power of distinguishing objects. Iris acts normally; no cause is given to account for his present state of impaired and gradually failing vision.

Ophthalmoscopic Examination.

Left Eye.—Optic nerve small and transversely oval; vessels very small; a darkish choroidal ring round the disc; retina very anemic and perfectly transparent; choroid beautifully seen; pigment tissue of a brownish color, very deficient in quantity and limited to the spaces between the

vessels; the retinal vessels small and of a purple colour can be distinctly traced over the retina. The choroidal vessels have a yellowish reflection mingled with a faint wash of red. The fundus resembles a museum specimen of lymphatic vessels well injected with mercury and yellowed with age, a condition due to the absence of the pigment layer, to the atrophy of the pigment tissue of the stroma, and to the reflection of the light from the membrana fusca of the sclerotic. The view of the fundus is a very striking one. In the direct axis of the eye a dark patch indicates the probable locality of the macula lutea, but the spot itself is invisible.(a) No traces of inflammatory action are apparent.

REMARKS.

The first case detailed is one of cerebral amaurosis, in which the insensibility of the retina is complete. The predisposing cause cannot be indicated, unless it be intemperance; but he distinctly denies any such habit. The proximate cause appears to have been derangement of the cerebral, and with it, of the retinal circulation. The only traces of local disease in the eye in addition to the anemia and consequent atrophy, consist of effusions into or changes of the vitreous humour affecting its perfect transparency, but these are of inconsiderable extent. The prominent features of the case are anemia and incipient atrophy of the optic nerve; retinal arteries reduced to threads; slight varicosity of the veins, and complete transparency, from anemia, of the retina. He has never suffered from pain in the eye itself.

In the second case we see an illustration of what may be called cerebro-spinal amaurosis. This patient had been a dissipated character, and had, moreover, suffered from syphilis. The ophthalmoscope revealed a pathological state, due in part to anemia and incipient atrophy of the optic nerve and retina, in part, to what I think were syphilitic deposits on the retina. As in the former case, the humours were a little hazy. In the previous case vision was totally lost in five weeks; in this case, all perception of light failed within five months. He had never suffered from pain in the eyes.

In the third case, we find progressive amaurosis, the result of derangement of the cerebro-retinal circulation, induced by extreme habits of intemperance, without any trace

(a) I have searched the healthy and diseased native eye for the macula lutea, but have not yet been able to detect it. The dark coloration of the choroid is the great obstacle.

of local inflammatory action. The pathological phenomena being those of progressive atrophy and anemia of the optic nerve and retina.

If, in cerebral amaurosis pain in the eye-balls seems to be less frequently complained of than pain in the head, yet this latter symptom also is at times absent, as may be gathered from the notes of the fourth case. In this case the anemic and atrophic processes had proceeded much further than in any of the preceding instances, inasmuch as not only the optic nerve and retina were highly anemic, but the pigment layer of the choroid had disappeared, and atrophy of the multipolar pigment cells of the stroma had proceeded to a considerable extent. In this instance vision was totally lost.

The last case recorded is an interesting one; the iris acts normally, and vision, though impaired and daily becoming worse, is still useful. He can see better during the day than in the evening, but he can also see better in a moderate than in a bright light. The examination revealed the reason. He has white atrophy of the optic nerve and retina still progressing, which explains the partial loss of sensibility of the retina, and the fact that the patient sees better during the day than towards evening; but along with these pathological changes, his eye shows absence of the pigment layer and great atrophy of the pigment cells of the stroma, revealing the cause of the albino-like shrinking from strong light and glare which, as he states, diminish rather than increase his power of distinguishing objects.

These cases of cerebral amaurosis appear to be interesting and instructive. I have secured faithful drawings of the ophthalmoscopic appearances of two of them, and should chromo-lithography in Madras succeed, I may on some future occasion, present them to the profession. Since the 1st of March last, (on which day I assumed charge of the Eye Infirmary) many cases of amaurosis, such as I have described, have come under my notice, as well as many instances of that partial amaurosis called nyctalopia. In the latter case I have found the optic disc of normal or nearly normal size, with a pink blush, pretty equally spread over its surface, the retinal vessels small but distinct, and the retina more transparent than natural; along with these local symptoms there are commonly evidences of general anemia, the effect of such debilitating causes as hyperlactation or malnutrition the result of vermination. In the more perfect amaurosis, how-

ever, the optic disc is atrophied and white, and the retina is abnormally transparent; the arteries are mere threads, and the veins appear occasionally atrophied, at times slightly full and varicose, whilst, at the same time, the general nutrition of the body may be perfect.

I am aware, as Mr. Dixon remarks, that "amaurosis implies no definite and ascertained disease; it is only a word expressive of our own ignorance as to the cause of our patients' symptoms." With him I gladly look forward to the not very distant day, when such unsuitable nomenclature shall be got rid of, but, in the meantime, perhaps, it is better to retain a well known name which involves no false pathological theory, until we are better able to differentiate the many affections now classed under the comprehensive name Amaurosis, affections of so wide a range as to embrace pathological states, not only of the *receptive* organ, the retina, but also of the *conducting* organ, the optic nerve, and of the *perceptive* organ, the brain.

Although it is true that mydriasis may exist without retinal disease, and retinal insensibility may be complete without mydriasis, still oculists have recognized the dilated and fixed pupil as one of the usual signs of amaurotic disease. In all the cases noted above, except the last, in which vision was only impaired, the pupils were dilated and fixed, a state in which, in the dark skinned races, the pupil presents a greyish blue haze due to the retina, which haze might lead one to suppose that it depended upon opacity of the lens. The irides of amaurotic patients are, in general, less susceptible of the action of atropine than those of healthy eyes, and the pupil much more slowly regains its normal size after artificial mydriasis.

The function of the retina cannot be carried on without a constant and sufficient supply of arterial blood. This supply may vary in quantity from various causes, some temporary, some intermitting, some permanent. The causes may be cerebral, gastric, intestinal, uterine,(1) or dependent upon general anemia. Or, again, the causes may act less upon the

(1) That the circulation of the retina is often seriously affected by sexual excesses and exhausting disorder of the generative apparatus is well known. A curious case of temporary amaurosis following parturition, is recorded in the "Lancet" for May 1863, p. 606, in which on eight separate occasions total blindness occurred on the third day after the birth of the child, and lasted from three to five weeks. There existed no special drain of blood or of lochia to account for the phenomenon.

vascular supply of the organ than upon its nervous structure, annihilating the visual function in a moment by their intensity, exhausting it more gradually, or impairing it only temporarily; such causes as lightning, intense glare of the sun, the vivid brightness of snow, &c., are examples of the causes referred to.

A practical remark may be hazarded here to the effect that, habits of intemperance appear to be powerfully predisposing causes of amaurosis. Of the five cases recorded, two occurred in men of intemperate habits, a third was a doubtful one, and in the remaining cases there was sufficient evidence to shew that the subjects had lived far from regular lives. One patient directly attributes his failing vision to drink. The effects of alcohol, opium, tobacco, &c., upon the eye and its functions, is a very important subject of consideration. Dr. Mackenzie dwells strongly upon the tendency such poisons have to induce asthenopia and amaurosis, and Dr. Sichel of Paris has lately read a paper to the Societé Medico-pratique on various kinds of cerebral amaurosis, especially those induced by alcohol and tobacco.

In none of the cases recorded, did I observe that excavation of the optic disc, said to be common in old examples of cerebral amaurosis, although in more than one instance the disease had been in progress for some considerable time. In the earlier stages of the disease, simple anemia of the optic disc and retina is alone present; by and bye to anemia is added atrophy of the optic nerve and retina, and in old cases, the bright glistening of the atrophied disc indicates the presence of fatty and earthy deposits among its fibres; an ulterior stage has been described in which cupping of the optic nerve has been detected.

I append a succinct account of the ophthalmoscopic examination of four well marked cases of nocturnal amaurosis or nyctalopia, which occurred among the out-patients of the Infirmary.

Case 1.

Luchmoo, Hindoo female, Æt. 35, suffers from recent and increasing nyctalopia the result of want and hyperlactation.

(1) Other agents, as lead, mercury, belladonna and even quinine have been known to impair the functions of the retina.

Ophthalmoscopic Examination.

Right Eye.—Humours quite transparent; optic nerve ovoidal, pink, except at the centre; veins rather full; a black pigment crescent on the nasal side of the optic disc; retinal veins large; choroid coat distinctly seen; retina very transparent.

The intermitting amaurotic affection was removed in great measure by more generous living. The left eye presented the same appearances.

Case 2.

Ammoye, female Hindoo child, Æt. 6, suffers from decided nyctalopia, the result of vermination; disease of six months' duration.

Ophthalmoscopic Examination.

Right Eye.—Optic nerve oval, slightly irregular, pink and congested; white spot in the centre of the disc; retinal vessels distinct; veins large.

Left Eye.—Optic nerve oval and very pink; a white spot in the centre; retinal vessels very distinct; veins large; retina somewhat congested.

After passing numerous lumbrici under the action of santonine[1], this child perfectly recovered.

Case 3.

Minchee, Hindoo female, Æt. 34, suffers from nyctalopia of four years' duration; cause unknown.

Opthalmoscopic Examination.

Right Eye.—Humours deficient in transparency; optic nerve small and indistinctly seen; slightly pink and obliquely oval; vessels of the optic nerve and retina very small; choroid visible through the anemic retina.

Left Eye.—Humours more transparent than in the right eye; vessels of the choroid more distinctly seen; atrophy of the pigment tissue of the choroid; in other respects the

(1) I use a "compound worm powder," composed of 40 grains of powdered Butea frondosa seed, 10 grains of santonine and 10 grains of ginger. Dose to children from 6 to 12 grains; to young persons, 20 to 24 grains.

examination of this eye corresponds in its details with that of the right.

In this example, the nyctalopia appears to be assuming the pathological characteristics of amaurosis. Changes in the tissues are in progress, which threaten the ultimate extinction of vision.

Case 4.

Abdool Cawder, Mahommedan; age not specified. Nyctalopia distinctly marked; disease on the increase; amaurotic symptoms supposed to depend upon epilepsy.

Ophthalmoscopic Examination.

Right Eye.—Optic nerve circular, rather indistinctly seen; pink and much conjested; veins of the retina large and much dilated; retina more opaque than usual; choroid coat very indistinctly seen; slight haziness of the vitreous humour.

Left Eye.—Optic nerve much congested; deeply pink on the nasal side; retina shews great venous conjestion; veins dilated; retina more opaque than that of the other eye; details as in the right eye.

In this case there are evidences of inflammation of the retina, probably of a sub-acute character.

I may mention before concluding this part of my paper, that I have examined with the ophthalmoscope several cases of nyctalopia, in which the details of the fundus oculi differed in no respect from those presented by the healthy eye.[1]

Notes of Surgical Cases.

Case 1.

Staphyloma Corneæ; Operation.

Thoyee, Æt. 8, Hindoo female, admitted 24th March, 1863. On the subsidence of an attack of small-pox about a year ago, her parents observed a speck on the right cornea, which has since been gradually enlarging; the opacity is accompanied with great protrusion of the cornea.

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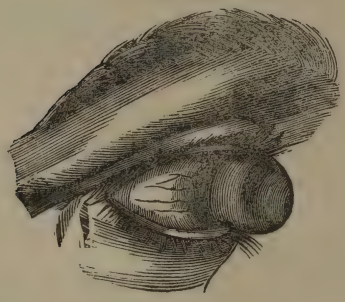
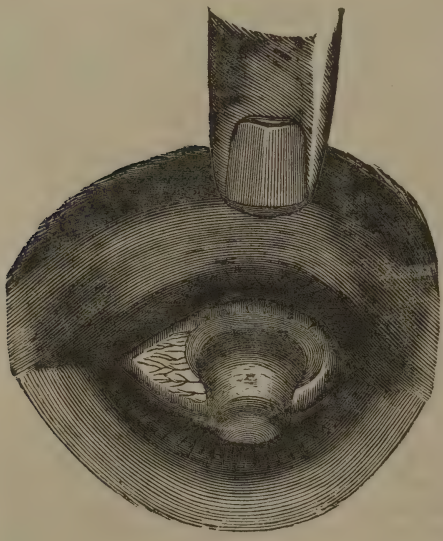
(1) The Ophthalmoscopes used in these examinations are those of Anagnostakis, Coccius, and the binocular made by Nachet of Paris. The Ophthalmoscope of Anagnostakis is best suited for *direct*, and that of Nachet for *indirect*, examination. The instrument of Coccins answers equally well for both purposes.

Present State.—Very prominent staphyloma corneæ; the enlargement passes three or four lines beyond the level of the tarsal margin, and entirely prevents closure of the lids; the shape of the prominence is cylindrical with a rounded extremity. The cornea is opaque with a dusky pigment stain on the anterior projecting portion of the staphyloma. There is slight transparency of the upper and outer part of the cornea, where a broad dark band—apparently the iris—surrounds the base of the staphyloma. Posteriorly there is some prominence of the ciliary body *(staphyloma corporis ciliaris)*, the black discolouration due to which, is more distinctly visible at the upper, inner and lower parts of the globe. Slight conjunctival congestion; vision quite lost. The parents state that the disease is on the increase.



No. 1.
Staphyloma Corneæ, (profile view.)



No. 2.
Staphyloma Corneæ (front view); eye directed downwards.

30*th March.*—*Operation.*—The patient having been placed under the influence of chloroform, the wire speculum was applied, and the base of the staphyloma was transfixed

with two curved needles armed with ligatures. Whilst the needles were "in situ," a vertical ellipse was removed from the tumour, including all the prominent and diseased tissue of the cornea. The needles were then drawn through, and the vertical edges of the wound brought together and secured. The lens had disappeared. The iris was found adherent to the inner surface of the degenerated corneal tissue. There was no hæmorrhage, no untoward symptom nor any suppuration of the globe of the eye. On the 15th of April she was discharged cured.

REMARKS.

The mode here detailed of excising large staphylomata, is that practised at the Royal, London Ophthalmic Hospital, Moorfields. Sometimes the staphyloma is removed by a horizontal ellipse, sometimes by a vertical. Mr. Bowman adopts both modes, though the latter was first suggested, I think, by Dr. Bader.

It is well known to practical surgeons that when the cornea and ciliary region are involved in staphylomatous disease, it not unfrequently happens,—from the state of the choroidal veins and from the sudden removal of tension consequent upon ablation of the affected parts,—that serious hæmorrhage takes place, necessitating prompt means for its suppression, which means often lead to inflammation and suppuration of the globe of the eye. Mr. Walton in his work on the "Surgical diseases of the Eye," 2nd Ed. p. 324, describes the best mode of performing the operation. To condense his statement, I may mention that he transfixes the portion to be excised with a tenaculum, and removes it with a long narrow scalpel gently and rapidly. He extracts the lens and endeavours to arrest the escape of the vitreous "by gentle manipulation and rapid closure of the eyelids." Then, in order to check copious bleeding and subsequent suppuration, he applies a pledget of lint quickly to the closed lid, secures it with a bandage and with straps of adhesive plaister. "The more the eye is diseased, the quicker and more copious is the bleeding," but such hæmorrhage, he says, may for the most part be checked by a compress. He mentions cases in which the vitreous had escaped; others in which it had been thrust out by clots; others in which the retina hung from the wound in shreds, and in which total collapse of the eye resulted, rendering it impossible

for the patient to have his deformity subsequently concealed by an artificial eye.[1]

Mr. Wilde of Dublin and Mr. Browne of Belfast pass a thread through the base of the tumour before the operation, in order to approximate the edges of the wound after the removal of the diseased part.

I think that three ligatures at least should be passed vertically before ablation, if the ellipse to be removed is a horizontal one, and the same number transversely, if the ellipse be a vertical one. "Mr. Critchett (vide Ophthalmic Hospital Reports, Vol. I. p. 302) modified the operation in three cases, by dissecting the conjunctiva back from the margin of the staphyloma; he then passed threads through the conjunctiva, which, after the staphyloma had been abscised, were drawn together so as to transform the aperture into a transverse slit; by these means the cut edges of the sclerotic and conjunctiva were kept in apposition, and the further escape of vitreous, &c., prevented."

The advantages of the operation which I have detailed, consist partly in the greater obstacle to the escape of the vitreous tumour due to the presence of the needles, and partly to the absence of the risk which the ligatures run of being divided during ablation of the staphyloma. No delay occurs in drawing the needles through after removal of the disease. On tightening the stitches, all chance of hæmorrhage and of escape of the virtreous is at an end.

The lens, if present, should be permitted to slip out before tightening the ligatures.

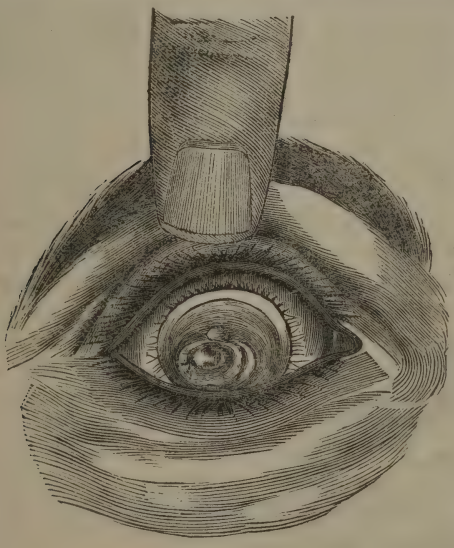
Case 2.

Dense leucomata of both corneæ; cataract of right eye; staphyloma of the left; patient can indistinctly distinguish day from night with the right eye; has no vision or perception of light in the left; Schuft's operation.

Ayesha Bee, Mahommedan female, Æt. 70. Some nine years ago this patient was attacked with inflammation of the right eye, and was treated by native hukeems. The disease ended in extensive lencoma with loss of vision; some

(1) On the choroidal origin of this hæmorrhage vide Dixon on "Diseases of the Eye," 2nd edition, p. 355.

nine months ago the left eye became affected and is now both leucomatous and staphylomatous, vision being quite gone. This patient represented that she could distinguish day from night with the right eye, and was most anxious that I should give her a chance of regaining vision, by operation. The appearance of the right eye is indicated in the wood cut. On directing her to look downwards, the lens was observed to be cataractous. There was no movement of the iris under the stimulus of light and little to hold out any hope of the retina being sound. The cornea at its upper part was clear, over a small extent of surface.



No 3.
Dense leucoma of the right cornea; eye directed downwards; upper part of the cornea transparent; pupil with cataractous lens indistinctly visible.

Having explained fully the apparent hopelessness of the case, and being again urged to give her a chance, I resolved to perform Schuft's operation on the right eye.(1)

11*th May*.—To-day a modified Schuft's operation was performed under chloroform. The keratome was gently passed through the base of the cornea into the anterior chamber from above. I attempted to seize with the forceps the iris, but found it impossible to raise the tense membrane, so as to bring it out of the wound and allow a portion of it to be ablated; the scoop was then passed gently into the posterior chamber and the iris pressed back; in doing so I managed without difficulty to remove a portion of the lens includ-

(1) "Die Auslöffelung des Staars." Von. Dr. Medadolf Schuft. Berlin, 1860, vide a notice of this work in the 3rd Vol. of the Ophthalmic Hospital (Moorfields) Reports, page 159.

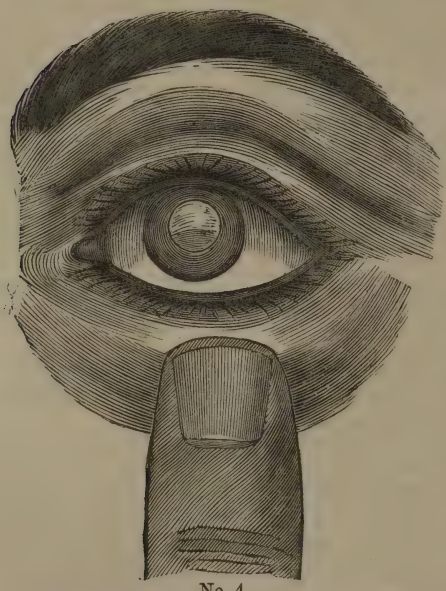
ing the hard nucleus, and thus to clear the pupil. No pain followed the operation; the anterior chamber filled again rapidly; no inflammation or other untoward result occurred. In a few days the parts had resumed their former appearance, but though the pupil was clear, there was no vision. The retina, as I had suspected, having been implicated in the antecedent disease of the eye.

CASE 3.

Fluid lens; moveable nucleus; removal of fluid by keratome and Wood's syringe; subsequent reclination of the capsule and nucleus; cure.

Ullamalloo, Hindoo female, Æt. 55, admitted 7th May 1863, with double cataract.

Left lens.—Lenticular matter quite fluid; the consistent nucleus, of a slight brownish shade, lies at the lower part of the capsule, and the rest of the capsule is filled with a milky fluid. On laying the patient on her back the nucleus gravitates backwards and disappears; on assuming the erect position it again re-appears, and may be made to fall into the pupillary area, when the head is much flexed anteriorly. The nucleus is small, round and distinct in its outline.[1]



No. 4.
Fluid Cataract; the moveable nucleus is seen at the lower portion on the pupil.

12th May.—Operation.—With a keratome a small incision was made in the upper and anterior part of the sclerotic, two

(1) A similar case is depicted in Sichel's "Iconographic Ophthalmoscopique" Planche 17, figs. 3 and 4, Atlas p. 17. I have lately seen another case similar to the above.

lines behind the margin of the cornea and in the antero-posterior axis of the eye; through this incision the point of a fine tubular needle of Wood's hypodermic syringe was inserted into the cavity of the capsule, and the fluid withdrawn; the nucleus was then reclined.

Next day, on examining the eye, it was found that the nucleus had risen, and that the capsule was distended with aqueous fluid. No pain or other inconvenience followed the operation.

22*nd June.*—The eye being quiet, the capsule and remaining portion of the nucleus (reduced by absorption) were reclined, and vision restored. The patient is now (17th July) quite well, and wishes to have the right eye operated on.

Indian oculists are well aware of the risk to which the eyes of cataractous cases are exposed, when the subjects of the disease, being old and enfeebled by a life long experience of poverty and malnutrition, are treated by operations acting upon the lens through the cornea. It has been long accepted as a truth, that amongst the natives of India the operation for extraction very rarely succeeds; even in well selected cases the risk of non-union is said to be so great that, practically, this valuable operation can only be exceptionally resorted to. Amongst healthy and better fed middle-aged patients the operation by anterior solution is often very successful; but in the old and poor patients of our hospitals even this trifling interference with the structure of the cornea too often ends disastrously, whatever may have been the care taken at the time of the operation and subsequently to its performance. The subject of the above case was an old woman of the poorest and worst fed class of natives; one whose cornea would have sloughed after extraction, and in all probability would have resented the repeated operations for anterior solution, especially if the needle had been introduced at short intervals to complete the cure. The lens was so fluid that any rupture of the capsule permitting the fluid to pass into the anterior chamber would have filled that chamber with liquid lenticular matter, rendering it necessary to tap the chamber in order to save the corneal structure, whilst a subsequent operation for reclination of the nucleus would have been required. It struck me at the time that by piercing the sclerotic a little posterior to the cornea, I might be able to

withdraw all the fluid, and having done so to recline also the capsule with its small nucleus and thus save the corneal structure from injury and risk. The operation answered well, and although the nucleus rose, it was again after an interval reclined by sclerotic puncture, with the result of clearing the pupil and restoring useful vision.(1)

Case 4.

Chronic glaucoma of the left eye; much hardness of the affected eye-ball; opacity of the lens; total loss of vision; sympathetic irritation of the right eye; iridectomy; result.

R. H., Æt. 36, East Indian, admitted 6th April 1863.

About 14 months ago, when voyaging from Calicut to Bombay, he suffered from sea sickness, and noticed a slight dimness of vision of the left eye which he attributed to severe vomiting. His sight was restored during a subsequent attack of fever, to fail somewhat on recovery. After this the dimness of vision rapidly increased; objects and colour could still be seen, but type could not be read. There was no pain in the eye-ball. About a month afterwards, that is in June 1862, his sight became still more impaired. Nothing beyond the movement of his hand between the eye and the light could be detected; he had experienced no pain. Even this feeble amount of vision failed him, and the eye continued without pain or further change till some four weeks ago, when he observed an opacity in the pupil. Since then he has suffered from dull pain in the temple; on looking at a lighted lamp, he notices, for the first time, an iridescent circle of light. Latterly he has entertained much apprehension regarding the condition of the sound eye; this organ has been feeling weak, and is failing him in his work; it becomes easily tired and unfit for the continuous strain arising from his usual office work as a writer.

Present State.—Globe of the left eye much harder than natural; pupil widely dilated and fixed; cornea clear; lens

(1) I may take this opportunity of stating that the success attendant upon extraction in well selected cases, as recorded by Dr. Archer of Calcutta and Dr. Macnamara of Muzefferpore, induces me to give that operation a careful trial at the Eye Infirmary, Madras. In 1819 Mr. Richardson, the then oculist, recorded several successful cases of extraction, but soon, as it appears, abandoned the operation. Has Schuft's operation received a fair trial in India yet?

opaque and filling up the area of the pupil; iris convex anteriorly; marginal synechiæ; lenticular opacity a bluish grey mingled with lighter streaks; slight circum-corneal zone. The right eye, with the exception of a slight circum-corneal vascularity, appears to be sound.

7th April.—To-day the patient being placed under chloroform an upper iridectomy was performed in the usual way, namely, with Schuft's keratome, iris forceps and scissors. A pretty large segment of the iris was removed without difficulty.

18th.—Very slight excitement followed the operation; a little patch of blood hides the opacity of the lens. The hardness of the eye is distinctly diminished.

19th.—Patient left to-day for an up-country station.(1)

20th July.—In a letter of this date received from him he says: The affected eye is quite free from pain and the ball is soft, "almost naturally so;" the opacity is not so visible as before the operation; sight has not returned in any degree. "The good eye keeps well;" "I have been able," he says, "ever since I resumed my duties to apply closely to my work (accounts), without any particular inconvenience."

REMARKS.

The history of the affection of the left eye is that of chronic glaucoma; on two several occasions the nature of the disease seems to have been overlooked, and so the stage when glaucoma is susceptible of arrestment was permitted to pass by unimproved. The danger to which glaucomatous patients are exposed, arises from the fact that the sound eye frequently takes on the glaucomatous change soon after the morbid action in the affected eye has come to an end. The disease runs the same course, and irremediable blindness is too often the result. In the case detailed, there was no evidence of the commencement of glaucoma in the sound eye, but there was evidence enough that the organ was suffering from sympathetic irritation, the result probably of great tension and of still persistent morbid action in the affected organ. The patient seemed to be aware of the fact that the state of the left eye was acting injuriously upon the right, and full of this apprehension he came to Madras for advice. The necessity of

(1) He left contrary to my advice.

putting a stop to any sympathetic irritation of the sound eye was recognized. There were two operations open to me in order to secure this end—1, enucleation of the glaucomatous organ; or, 2, a large iridectomy sufficient to relieve tension which in such cases, more perhaps than the concurrent morbid action, appears to be the proximate cause of danger to the sound eye. I was unwilling to enucleate the eye, because I thought the minor operation would suffice, and also because of the resulting deformity, and of the difficulty in India of getting the deformity lessened by the fitting of an artificial eye. I explained the matter to him, and with his full concurrence iridectomized the glaucomatous eye as described. The operation was done simply with the view of relieving tension, of arresting the chronic morbid action going on in the organ, and of putting an end to dangerous sympathetic irritation of the sound eye, and not with the slightest hope of restoring vision to an eye, which had for some time lost even the perception of light. The result has justified the course pursued. The consistence of the diseased eyeball is now normal, the deformity arising from a large opaque white lens has been diminished, the sound eye has been relieved of irritation and is now able to bear the somewhat heavy strain upon it, arising from the patient's duties as a clerk and keeper of accounts.

Iridectomy early employed will restore the impaired vision of acute glaucoma,[1] and will often preserve the remaining vision of a chronic case, but it will not give back vision to an eye in which, from chronic glaucoma the function of the retina has become permanently impaired. It is a fact recognized by ophthalmic surgeons who have experience of the operation, that iridectomy tends to restore the eye to its normal consistence, softening an indurated eye, and, on the other hand, rendering a softened eye more consistent. The rationale of this somewhat parodoxical medical fact is not very clear; but the fact is recognized as correct by some of our most distinguished ophthalmic surgeons, among whom may be mentioned Mr. Bowman.

(1) See case recorded by Mr. Lawson in "the Lancet," for November 2nd 1862, and another under the care of Mr. Bowman, detailed in "the Lancet" for May 23rd, 1863, pp. 577.

Art. X.—*Notes on Materia Medica.* By Edward Nicholson, F.C.S., Staff Assistant Surgeon, Calicut.

The Physiological Effects of Iron.

Few remedies have maintained as long-lived and undisputed popularity as those preparations comprised under the generic name of Iron, Steel, chalybeates, and martial salts: their utility is universally acknowledged and the favour they meet is proved by the number of preparations, often fanciful in their refinement, which have found their way into both the officinal and magistral pharmacopeia.

The earliest and most important of the medicinal uses of iron has been in the treatment of anœmia, and its apparently specific effect in disease of this type has naturally led to theories more or less chemical, as to its action. All these theories, from the simple supposition that iron goes to form the hæmatin of the blood corpuscles, to the more elaborate theory that iron is a conveyer of oxygen to the blood, savour too strongly of the ultra chemical school of physiology to be accepted as more than propositions serving to illustrate peculiar physiological theories. An analysis of the blood of an anœmic patient, before and after a course of Iron, does not prove that the large increase of red corpuscles in the blood after treatment was owing to direct assimilation of iron. The only thing proved is that the blood, after treatment, contained an increased number of blood corpuscles.

It has never been proved that the blood corpuscles of an anœmic subject contained less Iron than those of a healthy subject, indeed the result of Mr. Graham's analysis of colourless corpuscles went to prove that the difference of hue between the two sets of corpuscles does not involve any considerable difference in the proportion of iron. This result, which one would naturally expect from the fact of the two sets of corpuscles only differing in the stage of their development, coupled with the fact, that in anœmia it is not only the red blood-corpuscles which diminish in proportion, but also all the other constituents of the blood, (fibrin excepted,)—shows clearly that anœmia is no more *characterized* by a deficiency of iron in the blood than by deficiency of any other of its mineral constituents. It is mistaking the effect for the cause.

If an individual fall into an anœmic condition, the normal course of nutrition is perverted, blood is not formed as rapidly as it ought, the white corpuscles do not undergo their proper elaboration, there is a general want of nervous tone. But if this tone be restored by the use of tonics, whether of the pharmaceutical or of the purely therapeutical class, the formation of blood will be restored to its proper course, and the white corpuscles cease to linger in their elaboration. In many cases *neurotic* tonics, such as zinc, strychnine, or vegetable bitters, will produce the same effect as the so called *hæmatinic* tonic; therefore we must not conclude that, because Iron is generally the best tonic in anœmia, the anœmia has been caused by a deficiency of metal in the blood, and has been cured by giving a supply of the metal.

I remember hearing an eminent hospital physician, on the patients complaining that the potatoes of the Hospital diets were bad, direct that carbonate of potash should be added to their medicine, as he had just read, that the potato disease was caused by a deficiency of potash in the vegetable. He reasoned, correctly enough in a chemical point of view: bad potatoes are good potatoes—potash, *ergo* bad potatoes + potash = good potatoes.

The chemical explanation of anœmia and its treatment by iron is a very similar proposition, with the exception that, whereas in the potato case, the premises are chemically sound, in the case of anœmia, the premises that the blood is anœmic, because it is *minus* iron is far from proved.

Take the case of a chlorotic girl, who has been taking the same food as the rest of her family, or rather has had access to it, as her appetite is probably impaired. Her daily ration of Iron is the same as she has taken for years, the same as the rest of her family find sufficient to supply their blood with hæmatin, and yet she has fallen into chlorosis. I have never heard it asserted that chlorosis is a disease peculiar to the poor and ill-fed, indeed the many *elegant* preparations of iron extant, sufficiently show that this disease occurs indiscriminately amongst all classes, whatever be the amount of iron containing food they eat. While a great part of the improvement in anœmia treated by iron, is characterized by the elaboration of the white corpuscles into red; at the same time the quantity of iron contained in the average food of an individual is in very

fair proportion to the amount of nitrogenized elements, and sufficient to supply the iron required in the blood.

Reliable analyses of the blood give, on an average, in 1000 parts—

Solid organic matters	200
Containing Iron	0·45

Referring to my analysis-book, I find a series of analyses of various articles of food, which I made some years ago, and the following is the quantity of Iron contained in 1000 parts (moist).

Beef	0·70
Oysters	0·89
Cheese	0·31
Bread	0·15
Lentils	0·15
Peas	0·22

Analyses of many of the Indian grains which I made at the same time show a proportion of iron varying from 0·15 to 0·34 per 1000, while the spices, pepper, curry-powder, &c., contain from 0·72 to 0·97 per 1000.

It will be seen by these figures that a pound of the average mixed food of a man contains as much Iron as a pound of blood, and from this we may fairly deduce that in an average ration of food, there is an ample quantity of iron provided for the blood.

Indeed the quantity of iron daily required for the body, as measured by the quantity excreted, is very small indeed. The quantity of iron contained in the urine is very small; I cannot at this moment state the exact quantity, I only know from my own observation that the quantity is very small, almost insignificant. The quantity of iron in the urine is very little augmented by the administration of iron. Like the other metals, lead, copper, &c., iron is nearly entirely excreted by the bowels, in the form of sulphuret.

In the pharmacological part of Pereira's Materia Medica, I find that the learned author, though taking the chemical view of the action of Iron in anœmia, at the same time gives most excellent reasons why we should reject the chemical theory. He says (page 195), "In the treatment of anœmia, iron acts, in part, as an aliment. It supplies to the blood corpuscles an ingredient in which they are deficient, and it may, therefore, be said to serve as nourishment for them"

—and proceeds to discuss which preparation of iron is most readily assimilable.

He continues, "In anœmic cases, the use of iron, conjoined with sufficient nourishing food, pure air, abundance of light, and, when necessary, the employment of purgatives, proves curative.....In what way does iron relieve anœmia? Is it merely by supplying the ingredient in which the blood is deficient? I think not. Anœmia frequently occurs without any obvious cause; when there has been no deficiency of food, air, and light, and no profuse discharges. In such cases the disease cannot be ascribed to want of iron in the system, but to some defect in the sanguification process; the iron which is taken in with the food has not been properly applied in the manufacture of hæmatin or red blood-corpuscles. In such cases the chalybeate medicine relieves the anœmia by correcting the defect in the blood-making process, the seat and nature of which are at present unknown."

These last words are in curious contrast with the succeeding paragraphs. Dr. Pereira let falls the clue he had found, and proceeds, without it, to consider the effect of iron on diseases of the nervous system; how chorea, hysteria, and epilepsy are benefitted by iron; how it is nearly specific in splenitis, the result of intermittent fever; and how it is a most successful remedy in ague, asthma and neuralgia. Not only from this list, but from daily experience, we see that the cases in which Iron is beneficial, are almost invariably those where there is a functional disturbance of the nervous system, a want of nervous power.

There is no need of attempting to explain the action of iron in chlorosis by chemical theories. The general want of nutrition, impaired digestion, habitude of mind, dizziness on exertion, defect of the periodical ovarian excitement, all point to a want of nervous power. Supply that want, and the disease ceases. What are "sufficient nourishing food, pure air, abundance of light," but neurotic agents having a powerful effect on nutrition. Amenorrhæa does not arise from want of blood (indeed, it may coexist with plethora), but from want of the normal nervous excitement of the ovaries. The periodical extrusion of the ovum does not depend upon the percentage of hæmatin in the blood. The uterus and ovaries, organs peculiar by their nervous sympathies, are

readily affected by any deficiency of innervation and the rational treatment of catemenial irregularities, is to remove those causes which interfere with the healthy innervation of the uterine system, and to give tone to the nervous system when weakened. All the remedies of use in catamenial irregularities are in the class of *cerebro-spinal neurotics;* (Iron though belonging to the same class, again appears as the sole representative of the *hæmatinic* class).

The proper meaning of the word *tonic* has been lost sight of, and an occult blood-making power ascribed to Iron, at variance with its eminent tonic powers. The consideration of Dr. Billing's definition of tonics, gives the clue to the action of iron both in anœmia and in other diseases dependant on deficient innervation. "Tonics are substances which neither immediately nor sensibly call forth actions like stimulants, nor depress them like sedatives, but give power to the nervous system to generate or secrete the nervous influence by which the whole frame is strengthened."

Chlorosis is cured by iron, because the nervous system is given strength to secrete nervous influence; the languid functions of digestion are activated, blood is formed, the white blood-corpuscles undergo their final metamorphosis into red corpuscles, the dizziness and languor cease, the uterine system resumes its functions. Chorea is cured by iron, because the child is given strength to secrete nervous influence; the nervous system resumes its empire, the muscles return to dependance and obedience. In the treatment of ague, a disease which the cachectic appearance (both moral and physical), of the patient, the class of remedies employed (all neurotics, and most of them stimulants), and the character of the excretions, as I have shown in a previous paper,—all point out as dependent on an asthenic condition of the nervous system, iron is, or rather used to be, a valuable remedy. It is at present completely cast into the shade by quinine, a drug which seems to hold a middle place between the pure tonics, iron and arsenic, and the hyperæsthetic, strychnine. This is perfectly in accordance with the pathology of ague, if we recollect that the ague patient may have been perfectly healthy before the influence of the malarial poison; the affection of the nervous system, rather of a paralytic than of an atonic type, requires a stimulant rather than a tonic neurotic.

II.—The Preparations of Iron.

The favour enjoyed by the preparations of iron is evidenced by the existence of thirty-six distinct salt of iron, used to my knowledge by British practitioners.

I do not count preparations of the different salts, they would far exceed a hundred, without including the new preparations continually advertized,—generally syrups of barbarously named salts of iron unknown to chemistry. However advantageous it may be to have various pharmaceutical forms for the administration of medicines, yet the multiplication of the salts of iron, most of them with exactly similar medicinal properties, is of very questionable advantage, and it is to be hoped that in the *New Pharmacopeia* the committee will not increase the stock of nine salts of iron at present recognized. At the same time their names and mode of preparation might be advantageously modified so as to let the prescriber and the druggist know what is the preparation really intended in the directions laid down.

Metallic Iron.—The metal itself is but little used in England. Lately, however, iron reduced from the oxide to the metallic state by hydrogen, has been introduced into practice under the name of "Fer réduit." I see no advantage in it; as it cannot be dissolved till it has become oxidized in the body, there is no reason to prefer it to the officinal protosalts, especially as I have found specimens containing 10 to 15 per cent. of oxygen spontaneously absorbed.

Carbonate of Iron.—There is but one salt bearing this name, the carbonate of protoxide of iron; there is no sesqui-salt. Notwithstanding that the word is specific enough, care must be taken never to prescribe the salt without distinct specification, as the only *officinal* article is not carbonate of iron, but sesqui-oxide of iron, rarely the pharmacopeial preparation, generally red ochre finely ground. The only efficacy of this substance is owing to its impurity; were it really sesqui-oxide of iron, it would have no more effect than as much brick-dust,* but if prepared according to the pharmacopeia it generally contains, as an impurity, some carbonate of protoxide of iron to which it owes its efficacy. The dose, 3 i. to 3 iv., is sufficient evidence. The *impure* sesqui-oxide, in the above dose, is an efficacious tonic, espe-

* Or as much anchovy-sauce; indeed if sesqui-oxide of iron were of any efficacy, anchovy-sauce would be a useful tonic.

cially in chorea and neuralgia; it is preferable, however, to use true carbonate of iron, instead of dosing the stomach with a bulky drug, on the chance of its being impure, and in ignorance of the amount of impurity.

True carbonate of protoxide of iron is represented in the British pharmacopeias by the *Ferri Carbonas cum saccharo*, a most valuable preparation, possessing, in the highest degree, chalybeate properties.

It can readily be preserved unoxidised, it is easily soluble in the digestive fluids, and while possessing in a high degree the tonic properties of iron, it is perfectly unirritant in its action. It is a tasteless preparation; the dose, 3 to 10 grains, is small, it can be made up into pills, superseding the Pil. Ferri Comp.; and, in a mixture, the addition of a small quantity of citric, tartaric, or lactic acid will, if needful, convert it extemporaneously into a soluble protosalt of iron.

Good *Vinum Ferri* not being easily met with, I consider the Ferri Carb. $\bar{c}$ Sacch. as the best chalybeate for children; being tasteless, they take it readily. In the large dose of ten grains I have found it a most successful remedy in the neuralgia of women; also in amenorrhœa, especially when aided by the Decoct. Aloës Comp.*

It may be remembered as a fact not a little in favour of the carbonate of protoxide of iron, that all the chalybeate mineral waters (with the exception of a few sulphated or vitriolic chalybeates) contain their iron in the form of carbonate of the protoxide held dissolved by excess of carbonic acid. Crenate and apocrenate of iron are said to exist in some, but this is uncertain.

In the rare cases where phosphoric acid exists in a water in any notable quantity, the iron will be as phosphate, otherwise it will be as carbonate, held in solution in the state of bicarbonate of the protoxide, and deposited on ebullition as sesquioxide.

The quantity of iron contained in most chalybeate waters is small. There is a strong chalybeate spring at Hampstead within two miles of London, which I found last summer, to contain 6·09 grains per gallon of carbonate of iron. Not

* The efficacy of this decoction depends greatly on the adjuvants it contains. The cheap hospital decoction (Sine Croco. et Tr. Cardamomi Comp.) is not nearly so efficacious, besides being of disgusting taste, while the pharmacopeial preparation, after being kept some months, is of rather agreeable flavour.

being at a long distance from London, this well is not a fashionable resort, yet it is quite as good as any of the other chalybeate springs; that is not saying much, however, as I cannot see the advantage a patient would derive from drinking a gallon of disagreeable water, when the administration of eight grains of Ferry Carb. c. Sacch. would have exactly the same remedial effect.

The *Mistura ferri comp.* containing carbonate of protoxide of iron need only be mentioned as being a method of administering that salt. Its value is too well known to need comment.

Sulphate of iron seems to be rather out of favour at present. It is true that it does not act in the gentle manner of the protosalts of iron with weak or organic acids, and if a more astringent tonic be required, the chloride of iron is a more convenient preparation. Yet there is no reason why an acid mixture of protosulphate of iron should not be as efficacious as the Tr. ferri chloridi administered in the same way.

A small quantity of sulphuric acid may advantageously be added to prevent precipitation of insoluble oxide of iron. This salt has been charged with producing headache and irritant symptoms, but it is probable that the omission of adjunct purgatives may have been the cause of this, and it is certain that the strongly astringent preparations of iron, such as the sulphate, the chloride, and the nitrate, ought to be reserved for those cases where there is great relaxation of tissues or profuse discharges.

Tartrates and citrates of iron.—These organic salts of iron have been introduced of late years in the Pharmacopeia, and from their generally uncrystallisable state they have given the druggist ample field for the display of his skill. However useful they may be in enabling alkalies to be added to a chalybeate mixture, their introduction, with one or two exceptions, must be regarded as an evil, from the confusion they have caused in the pharmacology of iron, and the temptation offered to the druggist to invent hybrid compounds. It is to be feared that the New Pharmacopeia will contain more than its present moderate allowance of these nearly useless salts.

The chief place in utility amongst these preparations is occupied by the *vinum ferri.* This, when properly made, contains a protosalt of iron: I say when properly made,

as it is too much the fashion to prepare a wine extemporaneously by dissolving potassio-tartrate of iron in a wine of dubious vintage. The ingenuity of this proceeding is somewhat marred by the fact than *vinum ferri* does not contain the sesqui-salt, *ferric* tartrate of potash, but the proto-salt, *ferrous* tartrate of potash, a substance of very different qualities. Its formula is KO, Fe O, $\bar{T}$, while formula of the officinal potassio-tartrate, KO, Fe^2O^3, $\bar{T}$, shows that this salt belongs to the *chemical* class of emetics, formula MO, M O^3, $\bar{T}$, HO, (M representing any metal). This class of isomorphous salts, analogous to the alums, is named from the type of its class, tartar emetic, KO, Sb^2O^3, $\bar{T}$, HO. When the *vinum ferri* is properly prepared, it is an excellent preparation, the acid is feeble, the iron is in the state of a proto-salt; it possesses accordingly the same advantages as the carbonate of iron.

Ammonio citrate of iron is directed to be prepared in such a manner as to leave the manufacturer in considerable doubt as to what the salt produced really is. Is it intended to be citrate of protoxide, or of peroxide, of iron? The P.D. directs that proxide of iron shall be used in its preparation, and consequently the Dublin salt is of definite composition, but the P.L. gives directions for citrate of protoxide of iron, and yet the result is supposed to be citrate of peroxide of iron. This is the more curious as in the preparation of the Ferri potassio-tartras, an analogous salt, the iron is directed to be peroxidised at the beginning of the process just as in the Dublin formula. If peroxide of iron must be used to make the double tartrate of peroxide of iron, surely it must also be used to make the double citrate, yet the directions order that ammonio-citrate of peroxide of iron shall be prepared with protoxide of iron. The only reason I can see for this, is that the compilers of the pharmacopeia rely on the preparations of iron being prepared so slowly and clumsily that all proto-salts of iron shall become oxidised long before the completion of the process. It is most curious that in the directions for two other preparations, the same ingredients, treated in an exactly similar manner, yield, according to the P.L., in one case sesquioxide of iron, in the other carbonate of protoxide of iron.

The consequences of this incomprehensible state of things, though practically insignificant owing to the little regard paid by manufacturers to the directions of the pharmacopeia,

are yet liable to produce great confusion, and preparations which are not at all what they ought to be.

Chlorides of Iron.—The salt mentioned in the pharmacopeia are the *sesquichloride of iron*, and a mixture of one part of that salt with seven parts of chloride of ammonium, called *ammonio-chloride of iron*. Distinct directions are given for the preparation of the chloride of iron, but still marred by doubt as to the meaning attached in the pharmacopeia to the term sesquioxide. Sesquioxide of iron is directed to be dissolved in hydrochloric acid, and yet it has been prepared in exactly the same manner as the carbonate of protoxide of iron. The Tr. ferri sesquichloridi ought then properly to be a tincture of protochloride of iron. However, in practice, the tincture is generally prepared from a coarse red oxide of iron, only partially soluble in hydrochloric acid; evaporation is never pushed very far, and the tincture produced is very acid. Its flavour is not at all improved by this.

At present there is not the slightest need of preparing the chloride of iron before proceeding to make the tincture. Sesquichloride of iron is sold by the wholesale druggists in a state of considerable purity; it is in the form of dry yellow lumps, keeping easily in a corked bottle. Three Troy ounces of this dissolved in a pint of spirit, form the tincture of the P.L. The tincture thus obtained is of definite composition, has a much finer colour than the ordinary preparation, there is no excess of acid, and its flavour is more purely astringent. This mode of preparation is of some importance in India, where a pound of solid chloride of iron is of far safer and easier transport than its equivalent five pints of tincture; and spirit being procurable every where, a solution is readily obtained. The rapidly increasing use of this preparation of iron may render this easy method of preparing it not unacceptable to Indian practitioners.

I may here say a few words about the chlorides of iron which may tend to clear up some curious misconceptions. There has been recently introduced from France a plan of stopping hæmorrhage, coagulating the blood in dilated vessels, &c., by a solution of chloride of iron.

The earlier reports on this method called the fluid by its French name "*Solution de perchlorure de fer.*" I do not know whether any occult virtue resided in mysteriously calling the drug by a French name, but the fact is that a notion

became established in England that this perchloride of iron was a new preparation of great virtue and quite distinct from the sesquichloride.

It is needless to say that there are but two chlorides of iron, the *proto* chloride and the *sesqui* or *per*-chloride. I remember seeing in a weekly medical periodical, a review of a pamphlet "On the treatment of Consumption by a new remedy" the perchloride of iron; and will it be believed, the reviewer was not in the slightest degree aware that the new remedy was nothing but our familiar chloride, of which the tincture is one of the most extensively used of medicines in asthenic diseases?

The *ammonio-chloride of iron* has but few uses. Its tincture is very weak. The directions for its preparation are erroneous, making it only half the strength intended; when this error is corrected, the tincture contains one-sixth of the amount of chloride of iron contained in the Tr. ferri sesquichloridi, the latter contains, per drachm, 9 grains of chloride of iron, the former 1½ grains of chloride of iron, and 10½ grains of chloride of ammonium.

Iodide of Iron.—The syrup of this salt, as ordered in the P.L., is a very good preparation. It is generally well prepared by the druggists.

I have now only to consider the thirty or more miscellaneous salts of iron, that have found their way into the magistral pharmacopeia at different times. I will briefly consider a few of the more important.

Phosphates of Iron.—A number of these preparations have been recommended from time to time, though the advantages alleged in their favour are extremely questionable. The presence of phosphorus in bone and nerve tissue, led, I have no doubt, to the theory that phosphate of iron would be more readily assimilable than other salts and act in a double-barrelled manner on both blood and bone. There is no more ground for supposing that the administration of phosphates will improve the condition of the bones and nerves because they contain phosphorus, than there is for supposing that the administration of sulphates will improve the growth of the hair, because it contains sulphur.

The advantages of the phosphates of iron must be considered on their own merits, apart from any ingenious chemical theories of this description. And considering them thus,

the conclusion is, that the syrups and liquors of *ferri superbi-phosphas*, of *ferri et manganesii super-pyrophosphas*, and all the other preparations with barbarous names may safely be left upon the shelves of the ingenious inventors. Salts of the *magnetic oxide of iron*—citrates, phosphates, &c., have been proposed of late. Novelty is their only claim to attention. The tincture of the *acetate of peroxide of iron* P.D. is a mildly astringent preparation. It is not so astringent as the Tr. ferri chloridi.

Lactate of Iron.—This salt is much used in France; the existence of lactic acid in the digestive fluids is the reason for its introduction. Being a salt of protoxide with an organic acid, it is a good preparation, perhaps as good as the Ferri carb. c̄ sacch. It is decidedly the best of the newly-introduced salts of iron.

Tannate of Iron.—I only mention this as a compound often unintentionally produced by the mixture of an astringent vegetable tincture with a salt of iron. Great stress is laid on the incompatibility of tannic and gallic acid with salts of iron; the inconvenience is only in the black colour of the mixture; its medicinal properties are not impaired. Heberden's ink, the Mist. ferri aromatica, a most excellent preparation, contains tannate of iron and quinine. I believe that a similar mixture made with the cheaper varieties of bark would be found useful in the malarial diseases of India.

Art. XI.—*Remarks on a Case of Medullary Sarcomatous Tumour of the Face of six years' standing; Extirpation; Dangerous effects of Chloroform; Impending Death; Recovery.* By Thomas Lowe, Medical Officer, Madras Sappers and Miners, Dowlaishweram.

For the following interesting case I am indebted to the courtesy of Mr. E. Lloyd, Civil Surgeon, Cocanada, he having honoured me by transferring the patient to my hands for treatment.

Ramanjooloo, Æt. 50, a priest, father of five children.

About six years ago this poor man perceived a small painful swelling upon the gum of the upper jaw on the right side of the face. It soon increased in size, caused loosening

of the neighbouring teeth, and was attended with an offensive discharge and acute pain at intervals for several months.

Twelve months after its first appearance he applied for treatment at the French hospital, Yenam. The tumour was then about the size of a nutmeg, and very painful. Three loose teeth were extracted, and he took medicine for ten days, but returned to his home without benefit, and the growth proceeded for three years, about which period it had attained the size of an orange and had involved the cheek to some extent. A native doctor now undertook to cure the patient. Having made him very drunk with arrack, and having thus induced a certain anæsthesia, the doctor cut off, from the most prominent part of the tumour, a slice, the size of a rupee. Profuse hæmorrhage occurred, which was only arrested with much difficulty, after many hours, by burnt rag and charcoal,—the man's anæsthesia being kept up by repeated doses of arrack for two days. The doctor suddenly decamped after the operation.

After this, the tumour steadily increased to its present size; and from the circular edges of the wound made by the native doctor, a large trumpet-shaped fungoid excrescence grew rapidly.

The tumour now measures *twelve* inches around its base; the fungoid excrescence *three* by *three and a half* inches, in the centre of this there is a large fistulous opening into the mouth, from whence and from the whole surface of this fungoid mass there is a constant weeping of a most offensive matter.

The cheek is considerably involved, and is very tender to the touch; the capillaries are very prominent; the hard palate is free from disease; the finger can be passed pretty freely around its lobulated surface within the cheek; and its origin from the outer wall of the maxilla can be traced.

He has suffered from severe lancinating pains, for which, during the last two years, he has been compelled to eat largely of opium to induce ease and sleep at nights; he repeatedly rejects his food from the stomach, doubtless owing to an intermixture of the offensive discharges in

mastication ; and he has emaciated to a great extent. He is very desirous of undergoing any operation for relief.*

In Mr. Lloyd's letter to me concerning this case he says, "I think it myself too far gone to operate on, but you may think differently." Now, although the tumour bore indubitable marks of malignity, I cannot but believe that it had impressed Mr. Lloyd as a case unfit for operative interference from its formidable aspect alone. The etiology of the disease in its various stages,—from the simple small fibroid epulis to the development of the loathsome excrescence, left no doubt upon my mind that the tumour ought to be extirpated, and that it should be done without further delay ; and the prognosis, notwithstanding its malignity, was a favourable one. The difficulty to be met lay, not in its malignant features but, in the *planning* of the operation,—how to dispose of the ugly fungoid mass which had destroyed so much of the cheek, and yet retain sufficient integument to enable me to bring the incisions together without leaving a large gaping opening into the mouth ?

I considered the man had a fair chance of recovery, and I accordingly recommended an operation at an early date ; with this opinion Dr. Macdonald of Rajahmundry coincided, and on the 15th of April, with his able assistance, the operation was performed.

Operation.—The patient being seated in a high-backed chair, chloroform was carefully administered to perfect anæsthesia, and the operation commenced by carrying a sharp scalpel from the angle of the mouth along the body of the lower jaw to the margin of the parotid gland and through the membrane of the mouth,—this enabled me to grasp the tumour from below and within ; the scalpel was again carried from the angle of the mouth, in a semi-elliptic course, over the body of the tumour to meet the lower incision at the border of the parotid,—thus including and disposing of the unsightly fungoid mass.

From this second incision I dissected up, from off the body of the tumour, the thinned and very adherent integument

* This communication was accompanied by two illustrations which we regret we are obliged to decline reproducing. One was a photograph from a sketch by Mr. Lowe, and the other a photograph of the patient after operation. We need scarcely observe that for purposes of comparison both pictures should have been *from the subject direct*.—Ed. *M. Q. J.*

towards the orbit and nose. The tumour was firmly rooted to the periosteum of the zygomatic and canine fossæ.

The superior maxillary nerve was divided at the infra-orbital foramen, and the tumour then rapidly dislodged from the bone, leaving a large chasm behind. The hæmorrhage was somewhat profuse from the facial artery and other enlarged vessels, but as these were quickly secured, the patient lost no more blood than is usual in such cases.

The above is a brief detail of the actual operation, but its performance was delayed by a most serious occurrence. When the upper flap was dissected up to the orbit, the man suddenly ceased to breathe, the heart to beat,—he was temporarily dead!

The body, with the operation thus only half completed, was instantly lowered and placed upon a bed at hand, and every effort to restore life was made immediately. An enema of 2 oz. of brandy with Tr. Ammon: Co: and water was administered and repeated in a few minutes; cold water was dashed on the face and chest; Ammonia was now and then applied to the nose, while incessant efforts to re-establish respiration were kept up by alternately depressing the chest and diaphragm, and *forcibly raising and depressing both arms simultaneously*, as advised by Dr. H. Silvester, of London, in cases of drowned persons. After an anxious interval a deep sigh escaped from the patient, but as yet there was no pulse, Silvester's method was persevered in, and by and by we had the gratification of witnessing the return of life.

Consciousness gradually came again, and then the patient drank several draughts of strong brandy and water, and another enema of the same was administered. He now appeared as well,—as to the respiration and pulse,—as before the operation, and since the worst part was over, it was judged best to proceed and complete the work as the patient lay in bed. A few strokes of the scalpel sufficed, and the extirpation of the tumour was accomplished. In half an hour the chasm was filled with lint soaked in a cold solution of alum, and the upper flap brought down and united to the lower at the angle of the mouth by a needle and twisted suture; four other sutures were applied, and a single well-adapted seam from the lips to the parotid gland was alone visible. After the usual cold wet lint dressing and support were applied,

the patient sat up and amused himself with a looking glass with evident satisfaction.

He took two grains of morphia. No conversation was permitted; diet, meat, tea, and rice-water. The weight of the tumour was 11 oz. 5 drams. A section displayed the cerebriform and sarcomatous constitution peculiar to many of these adventitious growths. It contained no cyst. Its peculiarity was the large external trumpet-shaped fungoid excrescence, which added so largely to the perplexity in planning and conducting the operation for its perfect extirpation.

The patient made an uninterrupted recovery. Union by the first intention ensued; he regained the use of the cheek, and finally quitted this station in the middle of June. Now nearly four months since the operation was performed, the cicatrix is soft and painless, and far less unsightly than many are after a burn. There is some drooping of the lips at the angle of the mouth, but, considering the former great distension, it is gratifying to observe how soon nature works in restoring parts to their natural condition, and I have no doubt that this and the puckering now visible in the site formerly occupied by the tumour, will disappear in a great degree in the course of time.

I should not lengthen this report by additional remarks were it not to discuss briefly a surgical point, and the serious unforeseen casualty during the operation,—the *death of the patient*, and the happy results attendant on Dr. H. Silvester's method of resuscitation. This effect of chloroformization and the importance of the treatment adopted to restore life are sufficiently momentous, I think, to merit more than a passing notice.

1*st*.—The history of the case shows clearly that this morbid mass was nothing more, in its early stage, than an *epulis* growing from the periosteun of the canine fossa. For twelve months it only attained the size of a *nutmeg*, and had it been extirpated at that period (instead of extracting teeth and administering medicines), the patient would have been saved years of suffering and the severe operation he had eventually to undergo. *These growths ought to be radically extirpated as early as possible or not interfered with at all*, for experience fully demonstrates the worse than useless effects of caustic, the lancet, and seton.

This case is a good instance of lame and meddlesome surgery, for it assumed the malignant type immediately *after the morbid growth was cut into* by the native doctor. They may deceive us for an instant, for they are often very *elastic*, tense, and painful to the touch, conveying the idea of being simply full of fluid; but a little careful investigation invariably enables us to form an accurate etiological knowledge of the case, and should furnish us with the prognosis, so important to the patient, and remove our doubts as to the result.

These growths rarely terminate favourably without energetic operative interference, and I may mention, in proof of the necessity of patient investigation and the uselessness of the seton as a means of cure, that in the early part of this year a little girl, about three years old, was brought to me with an epulis *the size of a wallnut* growing from the jaw below the lower incisor teeth, and involving the lower lip in *three-fourths* of its extent, and through this fleshy tumour a stout ligature had been passed, at which the child was constantly pulling, and which, I need hardly remark, had caused increased and continued pain and rapid enlargement of the growth, which I at once extirpated, and the child made a rapid recovery, and has, at this date, a healthy little lip and well formed mouth. I do not hesitate to say that a malignant excrescence would have soon sprung up in this epulis had the ligature been permitted to remain for any length of time.

2*nd*.—Chloroformization,—temporary death,—recovery under Dr. Silvester's method.

Before the operation, the respiration and pulse were good; the chloroform was well diluted with air, and slowly, and carefully administered, while I watched the respiration and kept my finger on the pulse. Anæsthesia being effected in about five minutes, I commenced the operation. Chloroform was then only given occasionally when the patient evinced pain; the breathing went on well, there was no sign of approaching coma. While I proceeded with the dissection, Dr. Macdonald watched the respiration and pulse. The reflex function of the spinal cord *appeared* good up to the period when the upper flap was dissected of the tumour. At this moment it was observed by Dr. Macdonald that he had ceased to breathe, the heart had stopped,—life was temporarily extinguished.

Now, to what are we to attribute the sudden death? I believe in this instance it was owing to the sudden arrest of the reflex function of the medulla oblongata and to the consequent immediate paralysis of the heart. I am also inclined to believe that the chloroform added materially to the general exhaustion of the patient, which was doubtless much increased for the moment by the somewhat profuse hæmorrhage. I do not think it affected the passage of the blood through the lungs, or the quality of the blood itself; there was no sign of suffocation,—life was extinguished quickly, suddenly.

The result of our efforts, moreover, tend, I think, to strengthen this opinion,—the life of the brain, medulla oblongata and heart was restored by such means as act instantly and chiefly upon the nervous centres through the peripheral extremities of the sensitive nerves of the animal and vegetative systems. I have no reason to think the chloroform impure; I have used it since with the best results. I saw nothing to cause me to consider the heart of the patient in a state of fatty degeneration; and since the operation he has enjoyed better health than he has done for years.

Perhaps the sitting posture had much to do with it; but for all operations about the face of any magnitude I can scarcely see how we are to proceed unless the patient be steadily *seated*. The recumbent position I am convinced is *the* position in the majority of cases; but in cases like the above, I fear blood would accumulate too rapidly and profusely about the glottis and cause suffocation. Even when the patient is seated we are often obliged to depress the head in order to empty the mouth of blood.

In this instance Dr. Silvester's method was, according to the nature of the case, manifestly superior to that of Marshall Hall. We could scarcely think of rolling the man upon his face at this stage of the operation, supposing the latter method possessed better physiological claims, which cannot be conceded. As it was, a perseverance in Silvester's method crowned our efforts with success, and I fear had we not have practised it all other efforts must have failed. What length of time intervened between the moment of death and the recovery of consciousness I am unable to state. We were too intent upon the object in hand to take an exact note of time; but I do not err much, I think, in saying that upwards of twenty minutes must have elapsed.

The foregoing case conveys a wholesome lesson on the dangerous effects of chloroform in certain habits under peculiar circumstances, even when administered with great care, while it also bears signal testimony to the great value of Dr. Silvester's method of resuscitation. My warmest thanks are due to Dr. Macdonald for his invaluable assistance on this occasion. The tumour has been placed in the Museum of the Madras Medical College.

ART. XII.—*Reports on the recent Epidemic Outbreak of Cholera at Thayetmyoo.* By Acting Deputy Inspector General of Hospitals E. G. BALFOUR, Surgeon Major R. S. SUTLEFFE, Assistant Surgeon A. C. MCTAVISH, and Assistant Surgeon H. GRIFFITH.

(*Communicated by the Principal Inspector General Medical Department.*)

I.

[ACTING DEPY. INSPR. GENL. E. G. BALFOUR.]

To the Secretary to the Principal Inspector General, Medical Department, Madras.

SIR,

I have the honor to enclose the documents* required by Section V, para. XXXIV of the Medical Code, as reports on the recent epidemic outbreak of cholera at Thayetmyoo, and I submit those remarks, from myself, which para. XXXIV and letter No. 1282 of 26th May command.

Orders acted on.
* Return No. 16, as per Section V, para. XXXIV.
Report by Asst. Surgeon McTavish H.M's 3rd 60th Rifles.
Report No. 40 by Asst. Surgeon Griffith, G. Battery 23rd Brigade R. A.

2. I had already at some length forwarded such information as I possessed, and since writing my letter No. 1049, I proceeded to Thayetmyoo and repeatedly went over the ground on which the barracks of the Europeans are built, closely looking at them and at their out-houses. I had thus, in that respect, anticipated the desire of the Principal Inspector General, expressed in 1282 of 26th May, that I "should take steps to investigate the subject thoroughly;" and I have endeavoured further to do so, by

collecting together all available information. In carrying out this, as there are three officers* at Thayetmyoo, who have written the enclosed reports, I have thought that it would be an acceptable mode of arranging my remarks, on all bearing on the recent epidemic outbreak, to bring together the information acquired from all sources, as such a resumé would admit of an examination in a more connected manner, than could be effected were the reports from the executive officers; the information in their weekly and monthly returns; my own observation and enquiries; and the data from the record of this office; each forwarded separately. I have, therefore, drawn up the enclosed resumé and, in sending it, confine this letter to mentioning the conclusion to which I have come, and such points as it appears desirable to submit to the Principal Inspector General for consideration.

* Surgeon Major Sutleffe.
Asst. Surgeon McTavish.
Asst. Surgeon Griffith.

Resumé or precis given.

Of the sources of information.

3. This enquiry has shewn that cholera now occurs every year in some part or other of the Pegu Division; alike amongst the European and Native soldiery who are from distant countries, as amongst the prisoners in the Jails and the Civil populations. All the information obtained is to the effect that it not unfrequently appears in the remote hamlets of the Burmese Talaing, Karen, and Shan races; but generally in a sporadic form, and I think that epidemics involving any large part of the villages are extremely rare.

Cholera occurs annually in Pegu Division amongst the troops and villagers.

4. As to the general health of the country, I was informed during my journey in May and June, that Cholera and Choleraic Diarrhœa had been occurring all up the river, followed amongst the children by a severe measles epidemic, terminating at Prome in pectoral ailments and at Thayetmyoo in diarrhœa, under which many little ones sank.

5. Also, ever since November 1862, cases of cholera have been occurring along the Irrawady at Thayetmyoo, at Prome, at Myan Oung,* at Henzadah, in the delta at

* In April, 20 deaths from epidemic cholera occurred in this town, and, as I write, cases have occurred in Rangoon, 28 cases occurred in May in the Akyab Jail, of whom 16 died, and it is now (20th July) in a village N. W. of Thayetmyoo.

Bassein on the west, to Rangoon on the east, and at Moulmein on the banks of the Salween river. A fatal case occurred in the end of March on board H. M.'s Steam-ship "Nemesis" in which I sailed to the Andamans. The man was attacked at 11 P.M., when we were far away at sea near Barren Island, and he died at 7 in the morning; and another case on board, of choleraic diarrhœa, recovered.

With European soldiers is rarely in an epidemic form.

6. In none of the past five years, however, has this disease appeared amongst the European soldiery, to the extent recently experienced at Thayetmyoo. There had been sporadic cases there from November onwards. An officer of the Royal Engineers was then ill, but recovered. A private of the Rifles died on the 13th January: a Serjeant of Artillery was sick in hospital, when I was inspecting it on 23rd February: four cases, three men, and one woman, occurred in the Artillery in March, of whom gunner Moore died, and the epidemic broke out on the 21st April and lasted till the 16th May. In this period 36 Europeans, 8 followers and 1 prisoner were attacked—total 45 persons; 39 of whom were seized with the ailment in the 13 days between 24th April and 6th May; the epidemic outbreak therefore, in its severest form, was but of 13 days duration.

Outbreak in 1863 was of short duration.

In 1863 the natives of the Province and the native soldiery exempt.

7. There were some points in this outbreak which at once attract attention. The native races in Thayetmyoo were so entirely exempt from the disease, that only one prisoner in the jail was attacked and died. Of the camp followers even, residing in the European part of the cantonment, and living amongst the Artillery men and the Rifle soldiery, only, eight individuals were attacked, of whom five died. Also, of 748 Native soldiers in the 5th Regiment M. N. I., not an individual suffered; and this is the more noticeable, because out of an almost equal body of 602 Europeans, there occurred 36 cases and 21 deaths. In the L. W. 3rd Battalion 60th Rifles, from amongst whom most of the European patients came, only two of the native followers fell ill. The first question that naturally arises, therefore, is, What was there in the physical conditions by which the Europeans were

surrounded, causing more of them to be ill than the natives?

8. Again, the European soldiery of the Artillery and the Rifles reside in three bodies, viz., the Rifles, whose hospital and barracks run from the river bank in a north-westerly direction up a gradually rising slope. On the other side, further in the same direction, are one part of the Artillery barracks, on a gradually falling slope, and Artillery barracks Nos. 1 and 2 are inside the Redoubt quite close to the river bank.

Onset of the disease and prevalence in the Rifles barracks of Co.'s Nos. 3, 6, 7 & 8.

9. The first case of the epidemic occurred in the 3rd Company of the Rifles, and before the disease disappeared, there were in that Company nine of the 26 attacks. This 3rd Company occupied barracks 1 and 2; No. 1 barrack being nearest to the river bank, and continuously from it are 9 barracks running to the north-west occupied by Companies Nos. 3, 6, 7, and 8, from which 20 of the 26 seizures in the Rifles were received: of the remaining six cases of the Rifles, four took place in the 10th Company, whose barracks are quite to the west: and two cases came from the 6th Company, part of which had been moved into the Redoubt by way of precaution when the epidemic appeared. The Artillery in the Redoubt were so entirely free from the disease, that their comrades in the barracks outside were removed into the chapel within the Redoubt, after which no case occurred amongst them.

The Redoubt almost free.

10. As the disease, therefore, was chiefly prevailing in that narrow tract running from the bank of the river north-westerly, and ending with the Artillery barracks, a second question that arises is, what were the physical conditions surrounding the soldiers in No. 1 to No. 9 barracks, causing comparatively so many of them to be ill, while the Artillery in the Redoubt remained exempt?

Assistant Surgeon Griffith, in his weekly report on 26th May says, "I am entirely in the dark as to the origin and cause of this epidemic. It is worthy of remark that all these cases came from the barracks outside the fort, whilst the men occupying the building within the fort have, as yet, had no cases amongst them."

11. Reviewing all the conditions bearing on these questions, I am of opinion that the cause of the epidemic outbreak in April was a malaria pervading the atmosphere along the line of the Irrawady river and its delta, and on the banks of the Salween river at Moulmein, and that the European troops at Thayetmyoo were exposed to other conditions specially affecting them, some of which are apparent, but others can only be surmised. And the perusal of the enclosed reports will shew that each of the three Medical officers, though they have discussed all possible causes at the conclusion of the epidemic when leisure was given to them to look around,—arrive at the conviction that the source of the disease was in the atmosphere.

Cause, an atmospheric malaria, of wide spread.

12. Of the physical conditions apparent, differing from those of former years, I may mention that the Irrawady river, from February to the middle of June of this year, fell lower than had ever been known during the 12 years of our possession of Pegu. Rocks had been dry which had not been visible before, and though rain had occasionally fallen ever since April, when I passed down from the 8th to the 14th June, that shallow state of the river still continued.

In 1863 the Irrawady river had fallen shallower than before known, and its shallow state continued till end of June.

13. At all times winds incline to follow the beds of rivers, and at Thayetmyoo the prevailing southerly and south-westerly winds blow up the river bed right into the echelon located barracks; throwing into them, therefore, a larger amount of pure air when pure; but when not free from malaria, only the more exposing the inmates to its action, and this I consider was the case in that narrow tract which I have above described as the site of the European barracks of Companies 3, 6, 7 and 8.

The barracks are fully exposed to the prevailing winds, which in this year contained malaria and occasioned the outbreak.

14. Number 3 Company, in which it first appeared, is the nearest to the bank of the river, and is the first from the river in that echelon-like line of barracks, running to the north-west, in which 20 of the 26 cases of the Rifles occurred, and into which the wind-stream from the river bed

would pour; and this, in my opinion, was the cause of this outbreak.

The heat was great and weather oppressive, and much felt by the Europeans in their wooden barracks, thus pre-disposing to disease.

15. All the reports received describe the heat as great. The weather is noticed as "hot and sultry;" as "hot and oppressive;" as "hotter and more oppressive;" the heat was described as extreme, from 104 to 106 in the shade; and, it was mentioned, peculiarly fitful winds blew from various quarters, and even the evening breeze was quite hot with travelling over the burning jungle. Ever since December, along the line of the Irrawady, there were occasional periods in the weather of marked oppressiveness, caused by a great stillness in the atmosphere. This was observable at Thayetmyoo in February. In passing down the Irrawady in the end of that month also, the charred feather-like leaves from forests burning several miles away, fell often on the deck of the ship—an indication of how much farther the heated air from the conflagration would travel. It may not be doubted also that the European soldiery residing in their wooden barracks would feel the intense heat of the weather more than the native soldiery and camp followers would do, and more than the Burmese and native residents of the civil population, and thus, in so far, more predispose the Europeans to disease.

Food-improprieties, pre-disposed to disease, and hastened the outbreak.

16. As to the food used.—The first soldier of the Rifles attacked was one of a party of four of the 3rd Company, who partook very largely of a village pig. All of them suffered; but only that one died, and he had likewise eaten many green mangoes, and it was reported to me that others had eaten of the green mangoes growing near. Imprudence in diet, therefore, had increased an existing tendency to disease. Indeed the character of that first case was matter of discussion amongst the Medical Officers, as to whether it had its origin in that improper diet. When cholera once appears, it is never possible, with our present experience of it, to say how it will travel or where it will end. (Throughout its prevalence the soldiers of the Rifles and of the Artillery had their food cared for). But I am of opinion that, notwithstanding the first occurrence of the disease in the fatal case from amongst those four soldiers, the attack

equally had its origin in the atmosphere, and was merely a few days hastened on by the imprudence in the diet.

17. When cholera first broke out the barracks of the Rifles were under repair. Writing the weekly report from the 18th to the 24th April, the late Dr. Sparrow says, "The huts occupied by No. 3 Company had been newly thatched and matted, but whether this had a tendency to produce this disease, I am not prepared to state." Also Assistant Surgeon McTavish, in his weekly report from the 25th April to the 1st May, says, "I can assign no cause for the disease becoming epidemic, unless the repairs to the men's huts, which have just been completed, and consisted in being thatched, matted, &c., had some tendency to produce this disease, from the old thatch being saturated with organic matters derived from decomposed insects, exhalations from the men, &c."

Effluvia from old thatch and from new bamboos may have increased the pre-disposition.

In his April Sanitary report, dated 12th May 1863, he adds, "The only cause that can be assigned for the outbreak of this epidemic of cholera, is the old thatch which must be impregnated with organic matter from decomposed animals, and exhalation from the men and the new bamboos which eliminate a most unhealthy odour * * a considerable quantity of old and new thatching material has been lying about the huts during the month, but is now all removed and was laid down under the bank of the river at a short distance from No. 3 Company, but not in the regimental lines."

On these points I would remark that only those familiar with the use of bamboos in thatching can be aware of the peculiarly disagreeble odour which they then give forth, and particularly so when split. This state, seemingly, is caused by the fluid they imbibe when soaked in the muddy bed of a river or tank preparatory to use. But, writing calmly on the 17th June, five weeks after the epidemic had ceased, Assistant Surgeon McTavish says, "I do not think the epidemic could be caused by this." I, too, do not think that the 1863 epidemic was *caused* by the old or new thatching materials. But, as a rule, the disturbance of the earth is to be avoided in tropical countries, while human beings are near and the removal of rubbish, such as old

But did not cause the disease though soldiers should never be exposed to the mal-odours therefrom.

thatches, is similarly to be treated. Where possible, when such disturbances are necessary to a large extent, the inmates of dwellings should be removed from the neighbourhood. With all rubbish, the great purifier and cleaner is fire, and wherever it can be burned that mode of getting rid of it should be preferred. I am of opinion that, in future years, so long as thatch is used for the Thayetmyoo barracks, the precaution should be taken of vacating the barrack or barracks under repair, the inmates being distributed, if need be, either in tents or in other barracks, or in some available or hired house. As to cleaning in general, I consider it desirable that periodical cleanings should be thorough. To admit of this, however, outside and in, above and below, by thatching and scraping and limewashing, by removal of the earth beneath the barracks and replacing it with clean washed sand, the inmates should be temporarily moved out. And such sweeping and relaying below, is particularly needed in some parts of the existing barracks at Thayetmyoo, because built as they are on undulating ground, the floor in some places is too close to the ground to admit of such free sweeping or free ventilation as is desirable. I am not of opinion that the re-thatching caused the disease; but it is possible that the malodours alluded to may have assisted in predisposing thereto.

But be removed while in progress, in order that the periodical cleanings may be thorough,

18. In paras. 14 to 19 of my letter of 9th June, No. 1173 of 1863, I touched on various points* material to the comfort and the health of the Infantry alike in the present barracks, as in those projected. On none of these therefore is it requisite to touch more than is needed for elucidating the present outbreak and to indicate points which I think necessary for guarding against the recurrence of conditions which may have predisposed to or aggravated it, or may occasion the like conditions hereafter; I then explained that the drinking water was ob-

* Points to be attended to as future precautionary measures.
(a.) Cess-pools.
(b.) Urinaries.
(c.) Lavatories, their lowest boards to be removed.
(d.) Putting the upper and lower boards of barrack walls on hinges to augment ventilation.
(e.) The floors: (1) rendering their planks impervious to water by application of heated oil; (2) dry holy-stoning them; and (3) washing them periodically.
(f.) New barracks, orders required. (1) Whether for a wing or full regiment; (2) if for a wing there is ample ground space for selection; (3) even if for a full regiment, no necessity for a mathematical rigidity of adherence to plan.
(g.) River bed.
(h.) Source of drinking water.
(i.) Drainage.

tained from the river, to which the water carts had to toil through an intervening bed of sand, that has gradually been deposited since 1857; so that the river which, up till then, skirted the right bank over which the cantonment is built, in all the past dry months was running about 1200 yards distant. On this bed of sand, the stramonium and castor oil plant were growing; and, immediately below the right bank, the sand bed was scooped into a shallow run of water by the drainage from a rivulet higher up. I do not think that the sand bank bed alluded to had any further connection with the epidemic outbreak, than that it is preferable to have winds blowing over clean waters to being exposed to the bed of a river: and, as there were other inconveniences, I am glad to be able to mention that, on receiving the proceedings of the Committee, the Chief Commissioner ordered steps to be taken with a view to redivert the stream towards the right bank.

Sand-bank in the river bed, to be pushed from the right bank.

19. As this has relation to the drinking water, I may mention that I was informed by Captain Oliphant, Executive Engineer, that in some of the wells of Thayetmyoo there was an exudation resembling petroleum, which, when the water was allowed to stand, could be seen like a thin layer on the top. I have asked Surgeon FitzGibbon of the Rifles to give this subject his close attention, and I will report on it hereafter.

Drinking water.

20. *Cess-pools.*—I mentioned that, in February last, I had detected the existence of cess-pools in the European Infantry lines at Thayetmyoo; the late Surgeon Sparrow gave his immediate attention to this subject, and one of the first changes he effected was to discontinue the use of certain well water for drinking purposes and resorting to the river. Up till the end of my second visit, in June, however their precise number had not been ascertained, but since then, at my request, Assistant Surgeon McTavish has re-examined them and reported that they are 15 in No., of kinds. In answer to questions 2 and 6 in Sanitary report for June he says, "2. The cook houses are built of wood and divided into two cook rooms by a brick wall or partition; at the foot of which, on either side, is a range of small brick cooking places, one for each cook-

Cess-pools of all kinds should be closed.

room; along the outer or wooden wall there is an open drain with a grating in the centre, where all the water is thrown and conducted by a covered drain to a cess-pool about three yards distant. There are two cess pools to each cook-house, with the following exceptions; hospital cook house, one. In No. 2 cook house, the gratings are at the end of the inside drains, the covered drains outside converge into one cess-pool. In No. 5 cook house there are two cess-pools, but one is not used. No. 3 has no cess-pools, and is occupied by camp followers. These cess-pools are about 15 feet deep and 3 wide. The latrines are large brick buildings divided into four privies, one at each end of the lines, at the back of which, on either side of the building, the urinals are placed, which consist of an open drain or gutter for the men to micturate in. At the end of each drain, there is a grating and a covered drain which leads to cess-pool about 10 yards distant from the building. The south latrine has a cess-pool at each end; the north one has both cess-pools at the same end: these are said to be 30 feet deep, but have not been opened since our arrival at this station. The urinal attached to the latrine in the married quarters has a drain or gutter similarly constructed that leads to a cess-pool about four yards distant, which is about 15 feet deep. Total number of cess-pools 15. (6) The water supplied to the men for drinking and cooking purposes is obtained from a well, the river water being, at present, too muddy for these purposes and is only used for washing; the well in the lines near the canteen is only used for filling for the fire chatties in consequence of there being cess-pools in the vicinity."

In his report, when discussing the probable causes of the recent outbreak, this Officer says, "The cess-pools and drains in the lines I do not consider had any thing to do with it," and I, too, think that the precaution taken by the late Dr. Sparrow, after receiving my first letter in February, prevented injury resulting. But the state described is most unfavorable to health. Also, Assistant Surgeon Griffith, in mentioning that the water used by some of the Artillery was obtained from wells at a lower level than the horse sheds, and was often very offensive, more especially during the hot months, adds: (IX) "I do not think the use of this water acted in any way prejudicially on the health of the men, and, strange enough, not one case of cholera occurred among the men to whom it was principally supplied."

Having formed the opinion from all I have seen and heard, that it was a malarious atmosphere which occasioned this epidemic outbreak, I regard the state of the well water of the European lines merely as possibly predisposing to an unhealthy condition in those partaking of it; and I allude to what has been there, and still is, in this prominent manner, because I consider the purity of the soldier's drinking water of very vital consequence, to be attended to for future years, and am of opinion that no where, in any military cantonment, in a tropical country, should a urine pit or cess-pool of any kind be allowed to remain. And I submit for the Principal Inspector General's consideration to recommend to His Excellency the Commander-in-Chief the issue of a general order that cess-pools, every where throughout the military cantonments of the Madras Army be closed, and care be taken that conservancy carts and servants remove the refuse twice daily beyond the bounds in the manner that Dr. Hathaway proposes. I think that, with proper method and careful superintendence, the ordinary conservancy establishments now existing, are sufficient; but even if some additional aid should be required, the closing of every cess-pool is so necessary for the protection of health, that it would be well, if required, to incur some little additional expense. The accompanying plan* of the European portion of the Thayetmyoo cantonment will show that cess-pools, in the form of urine pits and pits for cook-house washings, are every where scattered about the Infantry lines, with wells for drinking water certainly not remote. And though the causes of many diseases are obscure, there is no doubt that illness may very readily arise from the infiltration into wells of the fluid contents of neighbouring cess-pools; and particularly where, as at Thayetmyoo, the rocks are in strata, infiltration may very easily occur. I addressed a communication on the subject to the Brigadier General Commanding the Division, and I have shewn the plan now sent with the cess-pools marked on it, and the subject has received and is receiving his consideration; but the matter has not a mere local interest, and the order, in my opinion, should be a general one.

Drinking water—purity is of very vital consequence.

Infiltration from cess-pools into wells can easily occur.

And cess-pools should everywhere be closed.

* The plan of the cantonment is fully explained by Deputy Inspector General Balfour's remarks—we do not, therefore, reproduce it.—Ed. *M. Q. J.*

21. Ventilation is still needed for the close hot months of the year and could be so easily and at so little expense increased in the Thayetmyoo Infantry barracks, by suspending the upper and lower boards of their wooden walls on hinges, that I recommend this be done. It is not probable that the new barracks can be completed for some years to come. Any little expense to introduce a great improvement is, therefore, not unadvisable; and it would be a very great addition to the comfort of the men, particularly where, as in Burmah, the barracks are built of wood, during the still oppressive weather of the hot season of this country to have the uppermost and lowest wall boards on hinges to open and shut as the weather demanded.

Ventilation could be increased in the existing barracks of Thayetmyoo by suspending the upper and lower boards on hinges.

22. The barracks.—Whether those projected are to be built for a whole Regiment or only for a wing, is a point of much moment to be decided for the future health of the inmates, because of the possibility in the event of a wing only being located, of selecting the most satisfactory sites for the buildings.

The more raised parts of the ground could be taken to build the new barracks on.

23. Drainage, for the same reasons, might even now be proceeded with if the strength of the future force be known. There are certain natural lines of drainage, along the bases of which the waters must be conducted, and in which no buildings should be erected, so that the drains needed for the projected new buildings could now be completed for the benefit of the existing barracks.

Drainage might be proceeded with at once.

24. Urinaries, with suitable pails, quite apart from and nearer to the barracks than the latrines, should, I think, be erected wherever bodies of European soldiers or their families are collected, as also near all schoolrooms, canteens, coffee rooms, guard rooms, and places of amusement.

Urinaries required wherever there are soldiers, separate from latrines and nearest the barracks.

25. It will be observed that, in this letter, I have confined myself to the question, what was the cause of the outbreak of cholera, in an epidemic form, at Thayetmyoo in April 1863, and, as to whether any conditions existed peculiarly predisposing the Europeans at that station, as it was amongst them, almost exclusively, that the disease prevailed?

I think the facts shew that the influence causing this disease was spread over a wide extent of country, and in the present

state of our knowledge the conclusion is justified that the atmosphere was the medium of its action. I am of opinion, however (1), that the intense heat of the weather and its oppressive character, and that (2) imprudence in diet predisposed certain individuals to be more easily affected by the malarious influence. As, also, but these points are more obscure, (3) predispositions may have been occasioned by gases emitted when disturbing the old thatch with the object of renewal, as also (4) from impurities in the well water and from the river falling lower than had hitherto been known: and to remedy these conditions, in future, I think the attention should be directed. To admit, however, of the subject being investigated by the Principal Inspector General, I have placed together all the information that I have been able to obtain and submit it in the following resumé or precis.

II.

Resume or Precis.

Thayetmyoo, in Latitude 19·30, North, Longitude, 95° East, is a small town about 200 miles N. N. W. from Rangoon, built on the right bank of the Irrawady river and close to the bank. The first row of its houses indeed run along the edge of the bank which is there about 40 feet high.

2. The Military cantonment lies to the north of the Civil Town. The barracks of the Europeans are also close on the river bank, the barrack nearest to it being separated from its edge only by the intervening high road, but the rest of the barracks of the European Infantry and Artillery are thrown somewhat more back and run in a north-westerly direction. Those of the Artillery and its hospital are at the greatest distance from the river and have a redoubt intervening. The Native Infantry barracks lie further away to the west and are the farthest from the river bed which is there, perhaps, not less than a mile away. The term river bed is here used because, since 1857, a sand bank has been forming opposite the cantonment of Thayetmyoo, and from January this year (I was there in February) up till I left it a second time, on the 8th of June, a great sand belt, about 1,200 yards broad, spread across the bed of the river in front of the redoubt. It was broadest there and diminished towards the south, till, at Thayetmyoo Civil Town, water filled the river bed and the steamers at each of my visits in February and June were moored under the bank at the Circuit house.

3. The cantonment and town are alike wholly cleared; but all round immediately beyond the limits of habitations, the

jungle begins, with occasional paddy fields, and low growing trees in more or less abundance. About three to four miles distant, on the western side, a range of hills appears which are densely covered with jungle. Their structure is sandstone and limestone, and the cantonment is built over a sandstone. It is in slight wavy undulations: from which and the absorbent character of the soil and rocks, the drainage could be made very perfect and the barracks could all be placed on the higher parts of the wavy undulation. Assistant Surgeon McTavish remarks, "Unfortunately the barracks are not built upon the most elevated part of the cantonment, but in low ground where the rain water is liable to become stagnant."

4. Sporadic cases of cholera have formerly been occurring in that cantonment, and in June 1859, its tendency in H. M. 68th L. I. at Meaday was to assume an epidemic form. In the Annual report for 1862, on 3rd Battalion of H. M.'s 60th Rifles, the late Surgeon Sparrow mentioned his belief that cholera was always more or less present in the vicinity, and that it would some day or other assume an epidemic character.* Assistant Surgeon McTavish mentions that cholera made "its first appearance at this station as an epidemic on the night of the 21st April at 11-30 P. M., when a man was brought to hospital in a state of collapse;" and Surgeon Major Sutleffe mentions that "the epidemic may be said to have ceased on 6th May, though the last case of cholera occurred on the 16th of that month."

Writing on this point Assistant Surgeon Griffith remarks that "During the early part of the month of January a few cases of cholera of a virulent character occurred among the men of the 60th Rifles; but towards the end of February all traces of the disease were lost, and hopes began to be entertained that the station would be free for the year. In the following month, however, it broke out with somewhat increased violence amongst the men of the Artillery, but all the cases at this period, although presenting all the symptoms of cholera, may be said to be of a mild character, and the recoveries were numerous; out of three cases only one death occurred. In the last week of April, one case of a very malignant character was admitted into the hospital of the 60th Rifles, but its progress was at first slow, and some difference of opinion existed as to the true nature of the disease, the majority looking upon it as a severe form of the sporadic cholera that annually prevails during the beginning of the hot

* I sent it on with my report on the division, and I am quoting from memory; but a reference to his report will enable his own words to be quoted

months. There was an interval of some days before any other cases occurred when it sensibly spread in the station."

Assistant Surgeon McTavish writing on this point remarks :—"Cholera made its first appearance in the huts situated nearest the bank of the river occupied by No. 3 Company and the most southerly part of the 60th Lines ; it was confined to outlines first, but soon made its way northward to the Artillery, and became general in both regiments."

5. On this occasion of 1863, however, the disease remained confined chiefly to the European troops, viz., 3rd Battalion H. M.'s 60th Rifles and G Battery 23rd Brigade Royal Artillery. No case occurred among the native troops, and even in the Rifles, with whom it was most severe, Assistant Surgeon McTavish reports that the hospital purveyor and toty were the only natives who died belonging to this regiment. Assistant Surgeon Griffith in reporting, on the 6th May, its occurrence amongst the camp followers at the station, gives the following as the "Daily number of cases and of deaths from cholera of the different classes of people—European and native troops and followers."*

Month and Date.	Non-Commissioned Officers.		Followers and Families.				General Observations.
			Men.		Women.		
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	
April 27th 1863.....	1	0	0	0	0	0	
„ 29th „	0	0	1	1	0	0	
„ 29th „	0	0	1	0	0	0	
May 3rd „	0	0	1	1	0	0	
„ 3rd „	0	0	0	0	1	0	
„ 4th „	0	0	1	1	0	0	
„ 5th „	0	0	1	0	0	0	
Total...	1	0	5	3	1	0	

Numerical Strength... { Europeans 9 / Natives 644

(Signed) H. GRIFFITH, *Asst Surgn.*

* The tabular statement has most probably been incorrectly copied, and should really be read April 27th, 28th, 29th, May 2nd, 3rd, 4th and 5th.—ED. *M. Q. J.*

6. With the native Burmese population escaping, and so few of the camp followers attacked, the farther remarks will profitably be confined to noticing the occurrences amongst the Europeans. From the 21st April to the 16th May, a period of 19 days, the admissions and deaths are given by Surgeon Major Sutleffe as under—

	Admitted.	Died.	
Europeans...	36	21	1 in 1·714
Native Troops	0	0	
Camp Followers	8	5	1 in 1·6
Population of the Station.	0	0	

From that officer's report it will be seen that of these admissions the great number occurred from the 24th April to the 6th May. In those 13 days the admissions were 31 in number.

Assistant Surgeon McTavish in his report shews that in the L. W. of H. M.'s 3rd Battalion 60th Rifles, the admission from 21st April to 16th May were—

EUROPEANS.					
Troops.		Women.		Children.	
Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
25	16	6	2	2	1

The total admitted, therefore, was 33, and the total died was 19: and it will be noticed that of the 33 attacked in the Rifles, 26 occurred in the nine days from 24th April to 2nd May.

7. In the past years, cholera has been occurring to some extent in British Burmah. The annual reports from this of-

fice for the past few years show that its attacks amongst the European and Native Troops have been as under—

Soldiers.					
Natives.			Europeans.		
Years.	Admitted.	Died.	Years.	Admitted.	Died.
1857-58	50	22	1857-58	2	2
1858-59	40	17	1858-59	4	1
1859-60	86	29	1859-60	9	6
1860	0	0	1860	0	0
1861	1	1	1861	0	0
1862	0	0	1862	4	2

Prisoners.			
Years.	Admitted.	Died.	
1858-59	117	58	1 in 2·01
1859-60	65	43	1 „ 1·5
1860	48	25	1 „ 1·8
1861	0	0	
1862	22	11	1 „ 2
6 months, Jany. to June 1863.	40	22	1 „ 1·8

8. Indeed the result of my enquiries is that cases of cholera are not of unfrequent occurrence in the villages of the Burmese, Karens, Jalains, and slave races who form the population of the Pegu Division of British Burmah ; and the returns received from the Jails record the occurrences of cases in Prome, which is only 40 miles from Thayetmyoo, as also in Rangoon and Moulmein, ever since November. In March, when far away at sea, near Burrin Island en route to the Andamans, a fatal case of cholera occurred on board in a prisoner of the gang of 210 who were in the transport. Another case recovered of choleraic diarrhœa ; but a second casualty amongst them took place at the Andamans on the

1st of April. The returns from the jails shew cases in Thayetmyoo, Prome, Rangoon, and Moulmein as under.

Jails.	1862.				1863.															
	November.		December.		January.		February.		March.		April.		May.		June.		Total.			
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.		
Rangoon Jail.....	...	...	..	...	.	...	..	...	1	...	..	..	...	...	...	..	1	...		
Prome „	1	...	...	...	...	...	4	2	13	7	2	2	2	...	2	..	24	11		
Thayetmyoo „	..	..	...	...	..	...	..	...	..	..	...	..	1	1	...	...	1	1		
Moulmein „	..	..	...	...	...	..	4	...	6	3	4	3	...	...	..	...	14	6		
Bassein „	...	..	...	..	...	...	...	...	...	..	...	...	...	...	8	5	8	5		
Total	1	...	..	...	..	...	8	2	20	10	6	5	3	1	10	5	48	23		

In Thayetmyoo itself, ever since November last, it had been occurring amongst the Europeans. An officer of the Royal Engineers was taken ill in November, but recovered. A soldier of the Rifles was ill with cholera in the third week in January, and cases occurred in the Artillery in the 9th, 10th and 11th weeks of this year. The last case heard of at Thayetmyoo is that of a prisoner in the Civil Jail, who was attacked and died in May.* The state of the weather since December 1862 has been peculiar. I have been constantly travelling in the Pegu and Tenasserim Provinces from Thayetmyoo to Mergui, and had many opportunities of judging of it. The heat during

* As this is being compared preparatory to despatching it, the Inspector General of Police has sent me the following extract from the Diary of the Prome District Superintendent, dated 9th July 1863. From Myoak Yoot, a police station 30 miles, say from Thayetmyoo, in a North West direction and close to frontier "(a village,)" Myan-lah, about two miles from this, had been attacked by cholera. Nine persons have died in the last two or three days and the rest dispersed. * * * He also remarks that it is a very late year that in places where the people were last year at this time planting out the paddy, this year the fields are still dry and unploughed. In a report recently received Assistant Apothecary Yarde mentions that, 20 deaths from epidemic cholera occurred in Myanomeg in April, and Dr. Nisbett informs me that in Akyab Jail in May 16 deaths occurred in 28 attacks.

the day, from 11 to 3, was much felt by every one; and in door, in the thin wooden or mat dwellings of these provinces shelter in doors from the sun's rays did not afford much relief. The weather had attracted much attention at Thayetmyoo; though as reported by Surgeon Major Sutleffe, rain was often observed to be falling copiously all round, but little of it fell in the station since 1st January; some fell about the early part of the epidemic (slight showers on the 21st, 23rd and 25th, and 8-10th on the 26th April) which greatly lowered the temperature, but appeared to make no impression on the disease. There was, he says, "no thunder or lightning," and the tests employed did not shew the slightest amount of Ozone in the air. The temperature was, at this time, very high; and on the 21st April, as also during the epidemic, the atmosphere was extremely oppressive. Even so early in this year as the end of February, I had noticed this peculiar character in the atmosphere at Thayetmyoo, and I thought it arose from the stillness in the air, and the burning of the forests in the south and west. As I passed down the river paper-like charred portions of burned vegetation fell on the deck from forest burning many miles away, and the heated air would travel much farther; and the smoke of conflagrations showed in how many places the jungles and forests were on fire. The state of the weather and of the Thermometer and Barometer at Thayetmyoo seemed to have received much attention from the medical officers, and it is noticeable that the range of the Barometer at 6 A. M., from the 20th to the 24th April, was higher than in the other period of the epidemic, and that at 4 P. M. and 6 P. M., 21st April, and from 25th April to 4th May, the Thermometer fell considerably. The fall of 15° on the 21st from 103° of the 20th April was particularly noticeable, and it was on the 21st that the first case in the Rifles occurred.

	6 A. M.	4 P. M.	6 P. M.
20th April 1863.....	84	103	101
21st April 1863.....	85	88	88

The following table is given by Assistant Surg. McTavish, to shew the range of Barometer, Thermometer, and prevail-

ing wind with fall of rain from the 20th of April to 16th May when the last case of cholera occurred.

	Days.	Thermometer. 6 A. M.	Thermometer. 4 P. M.	Thermometer. 6 P. M.	Wind and Rain.	Barometer. 6 A. M.	Barometer. 4 P. M.	Barometer. 6 P. M.
April	20	84	103	101	W. Slight shower.	29·10	29·00	29·00
	21	85	88	88	„ „ „	29·20	29·00	29·00
	22	80	100	98	„ „ „	29·10	29 05	29·05
	23	84	102	100	„ „ „	29·25	29·10	29·10
	24	84	103	103	„ „ „	29·15	29·00	29·00
	25	84	87	86	„ 8·0 „	29·05	29·00	29·00
	26	84	82	82	„	29·00	29·00	29·00
	27	78	92	91	S. W.	29·10	29·00	29·00
	28	82	94	92	S. W.	29·00	29 00	29·00
	29	79	92	92	S. W.	29·00	29 00	28·95
	30	81	99	95	W.	29 00	28·85	29·00
May	1	83	90	88	S. W.	29·05	29·00	29·00
	2	80	93	91	W.	29·10	29·00	29·05
	3	82	98	98	W.	29·10	29·00	28·95
	4	84	101	99	W.	29·10	28·90	29·00
	5	83	101	99	W.	29·15	29·00	29·05
	6	83	101	99	S. W.	29·10	29·05	29·00
	7	86	101	99	S. W.	29·20	29·05	29·00
	8	83	101	100	S.	29·10	29·05	29·05
	9	83	99	96	S.	29·05	29·05	29·00
	10	84	101	99	S.	29·10	29·00	29·00
	11	84	101	99	S.	29·15	29·00	29·00
	12	83	100	97	S. W. Slight shower.	29·15	29·00	29·00
	13	83	94	92	W. „ „	29·00	29·00	29·00
	14	82	97	93	W. „ „	29·10	28·90	29·00
	15	82	100	88	S. W. „ „	29·00	29·00	28·90
	16	83	99	97	W. „ „	29·05	28·95	28·90

Surgeon Major Sutleffe writing as to the cause remarks :—"I cannot trace either its origin or progress with any satisfactory certainty, but it appears to have kept close to the river and along its course." But the condition of the atmosphere, the cleanliness of the cantonment, the rations, the vegetable food supplied, the unripe mangoes used as food, the fresh pork, the space for the soldiery, the old thatch left on the ground when rethatching the barracks, over-proximity of the barracks to the river, whence noxious effluvia emanate, cess-pools, drains, and cleanliness generally

and the duties of the troops, have all received the consideration of the Medical officers as possible exciting causes of outbreak, and it is of importance to weigh fully their views.

Remarking on the atmosphere Assistant Surgeon Griffith observes :—"IV. In reference to the greater virulence of the disease during this brief period, from 27th to 29th April, I am able, I think, to connect it with an abnormal meteorological condition of the atmosphere during that time, though it is of course impossible to indicate the precise condition, most probably electrical, which was the immediate morbific agent in the production of the disease. At this period there occurred a marked depression of the Thermometer* Barometer† with unusually strong whirlwinds, thunder and dark clouds, apparently filled with rain and surcharged with electricity, but with the exception of one slight shower no fall of rain occurred."

The following table will shew the state of Barometer and Thermometer at the time.

Dates.	Thermometer.			Barometer.	
	6 A. M.	2 P. M.	6 P. M.	10 A. M.	4 P. M.
April 24	82	102	95	29·750	29·650
„ 25	80	85	82	29·725	29·625
„ 26	79	82	82	29·700	29·600
„ 27	80	95	92	29·700	29·600
„ 28	82	97	92	29·700	29·600
„ 29	82	97	92	29·700	29·600

"V. Although I consider the above, whatever it may be, the primary cause of the disease, that is to say, so far as I am able to form an opinion."

Assistant Surgeon McTavish touching on the same point observes :—"The first cases of cholera were supposed to have arisen from eating unripe mangoes and fresh pork. This no doubt may have been the exciting cause of two cases, viz., Private Parry and Mrs. Knight who were known to have eaten green mangoes, yet the true cause of the disease is most obscure and, in my opinion, can only be attributed to some unknown atmospheric change."

* sic. † sic.

Assistant Surgeon McTavish remarks "another point worthy of notice in connection with the epidemic, is the fact that the European barracks are built close to the river bank, and consequently are exposed to noxious vapours arising from decomposed vegetable matters acted upon by the scorching rays of the sun at this season of the year when the river is low, while the Native Lines which are some distance from the river were not attacked by the disease."

The cess-pools and drains in the barracks of the Rifles received Dr. McTavish's consideration, but as to their share in the cause of the out-break he adds—"The cess-pools and drains in the lines I do not consider had any thing to do with it."

The barracks of the Rifles were under repair, and Assistant Surgeon McTavish mentions that "there was a quantity of old thatch lying about the huts and on the sand on the bank of the river when the disease first made its appearance, though contrary to sanitary arrangements could not be avoided, the huts being under repair. I do not think the epidemic could be caused by this, yet if I was ever in Medical charge of a regiment quartered in thatched buildings, I should decidedly recommend as a precautionary measure that the men were removed while any thatching was going on as the old thatch must, to some extent, be contaminated with decomposed vegetable and animal matters, and the new bamboos emit a most unpleasant odour."

The general cleanliness of the station is thus noticed by the Senior Surgeon :—"Previous to the out-break of cholera continued attention had been paid to keeping the barrack grounds clean, closing all cess-pools and deodorizing all latrines, and removing all objectionable nuisances, yet," as he adds, "cholera was raging in these clean and apparently healthy quarters, whilst the natives surrounded by accumulated filth were entirely free. The town has since been carefully attended to, and after careful inspection it now appears to me that there are few Native towns so clean."

Assistant Surgeon McTavish reporting on the Rifles, tells us that "the duties of the men were neither severe nor fatiguing and could not have excited any prejudicial influence on their health," and the Senior Surgeon adds, "that the duties of the troops were not injurious to their health; the duties are light, and recreative amusements were found for the men—cricketing, quoits, &c., &c."

Surgeon Major Sutleffe tells us that the rations of the troops have been very good. Assistant Surgeon McTavish adds that the food consisted of the ordinary soldier's rations. Assistant Surgeon Griffith regards improper or deficient food as inducing a powerful predisposition to this disease, and tells us that "the vegetables at this time of the year although not quite unfit for food, are exceedingly bad, fibrous, and unpalatable, and the consequence was that the greater number of the men lived entirely on bread and beef." But as Assistant Surgeon Griffith's train of reasoning regarding the cause of this outbreak and the predisposing causes are all consecutive, it seems desirable to give his views in full; after noticing in para IV. the abnormal Meteorological condition of the atmosphere, he adds in para V.—"Although I consider the depression of the Barometer, whatever it may be, the primary cause of the disease (that is to say, as far as I am able to form an opinion), still I believe that the most powerful pre-disposition to the disease is induced by improper or deficient food, and that for this reason its chief victims are found invariably among the private soldiers, and it is invariably admitted that a far more powerful pre-disponent is the habitual respiration of impure atmosphere from overcrowding, and the highest degree of susceptibility is produced when both these conditions are combined, that is when people live irregularly or on unsuitable diet, and at the same time living in a crowded room where the atmosphere has become impregnated and surcharged with gases generated by the lungs, and when it must be, if not disturbed by some mechanical means, inspired into to the same lung over and over again."

VI. "The two foregoing conditions were present, I regret to write, during the late epidemic of cholera, viz., the vegetables at this time of the year, although not quite unfit for food, are exceedingly bad, fibrous and unpalatable and the consequence was that the greater number of the men lived entirely on bread and beef. Now as to other conditions, I am well aware that it is the general opinion amongst the most experienced men of the day that 1,060 cubic feet, or even less than this, suffices not only to sustain life but to promote health, and as the men of the Artillery had during this period 1,336 cubic feet of breathing space to each man, the corollary must necessarily be that they were not crowded, that the atmosphere contained in these barracks was not impure, but it is incumbent on me to state in the face of

these facts that the Artillery barracks which were visited daily at 12 o'clock, although the men having all these cubic feet of space, were highly impregnated with the smell, which generally exists in overcrowded rooms. This was I think attributable to the peculiar stillness of the atmosphere, following immediately after the elemental disturbance spoken of before.

VII. "The water used by the men of the Artillery is principally taken from certain wells within the horse lines, which are situated as it were in a valley beneath where the horses are fed, &c.

It was the practice to draw water out of these wells and the smell emanating from it (the water) was often very offensive, more especially during the hot months, when the water is low, and when examined microscopically was found to contain much decayed vegetable matter.

VIII. "This was owing to the scarcity of water in the wells, and the accumulation of dirt at the bottom was therefore easily stirred up during the process of pumping it; but the greatest objection to its being used is the fact of the contents of the cess-pools attached to the horse sheds percolating through the substratum and therefore intermixing with it.

IX. "I do not think that the use of this water acted in any way prejudicially on the health of the men, and strange enough not one case of cholera occurred among the men to whom it was principally supplied.

X. "The supply of this water for the reasons stated above was of course immediately discontinued."

"The means of modifying the outbreak received considerable attention. Assistant Surgeon McTavish mentions "that when the epidemic set in ½ lb. of bread was issued to the men in lieu of country vegetables, at the recommendation of the senior Surgeon. For two or three days all malt liquor was stopped from being issued to the men at the recommendation of the Surgeon of the Regiment. This latter arrangement I did not consider judicious as it was too great a change in the diet of men who were daily in the habit of taking the prescribed allowance of beer or porter." On this point also Surgeon Major Sutleffe observes that the late Surgeon Sparrow at one period of the epidemic suggested that the supply of malt liquor should be stopped. I did

not approve of the suggestion. The men returned to their usual allowance after two days.

Assistant Surgeon M'Tavish tells us that "when the epidemic set in the men of No. 3 and 10 Companies were removed under canvas, No. 6 placed in a Commissariat godown in the Fort, the band quartered in a house hired by Lieutenant Colonel Roe, commanding the regiment, No. 7 Company were distributed in three huts instead of two, and No. 8, who were comparatively healthy, having only had one case remained in the former quarter.

The wing could not march as there were not sufficient tents, all the huts in the lines No. 2, the eye and female wards in the hospital, were fumigated with coal tar, the huts No. 10 Company were whitewashed, all the old thatch and bamboos were removed from the lines, and the refuse, consisting of thatch, bamboos, &c., which were placed under the bank of the river at No. 3 Company, carted away on the recommendation of the Surgeon of the Regiment. The barracks were left unoccupied for some time after the epidemic until the men began to grumble sadly at being kept in tents and godowns, the Regimental band played about every evening and several extra parades took place to distract the men's minds."

On the other hand, as will be observed in the Battery of Royal Artillery, no case of cholera having been admitted into Hospital from the buildings within the Fort, the men were removed bodily to the Roman Catholic Chapel, a large commodious building within the Fort, and in the immediate vicinity of the Gunner's barracks. This change was followed by the most marked beneficial results as not one case occurred since, and the Senior Surgeon adds, "Colonel Roe * * * was most energetic during the progress of the disease, every thing was done which appeared conducive to health. He and his officers were continually in the hospital day and night, endeavouring to cheer the sufferers with words of kindness and hope. Assistant Surgeon Griffith describing the disease mentions that all the men admitted for cholera confessed to having had diarrhœa for some days, and to having had cramps and vomiting for some hours previous to admission. In one instance the patient was sick in barracks for nearly twelve hours and was brought into hospital in a dying state. Anxious to get the men under treatment as soon as possible after the first symptoms of diarrhœa came on, they were in-

spected twice every day. By this means very many cases of malignant diarrhœa were found out in time for remedies to act quickly and beneficially on the disease which was rapidly putting on the form and character of cholera.

Several instances occurred in which the men were found lying on their cots in a state of prostration, vomiting and purging, but still reluctant to go to hospital for treatment, and many of whom were actually forced to leave their barracks."

XI. "Symptoms of the disease may be summed up in a very few words, viz., vomiting, diarrhœa with rice colored evacuations, cramps, suppression of urine, the peculiar sunken countenance giving the expression of age to the patient with a livid or liver blue color. The breath, tongue, and the extremities in all the cases which came under my notice were always cold, shewing that the patient had suffered for a length of time before coming into hospital. In every instance the cramps were unusually violent. The disease was at first most violent, death frequently ending the suffering of the victims in a very few hours, in many cases so rapid was the complaint, that scarcely any time to administer remedies was afforded, the powers of life sinking from the first. But in a few days it began to put on a more favorable aspect, and the recoveries were numerous, assuming latterly the character of choleraic diarrhœa of a very malignant nature."

XII. "The treatment consisted principally in the administration of chloroform combined with opium, stimulants and nourishments in the shape of wine, brandy, chicken broth, and beef tea, continued friction over the whole surface of the body and extremities, sinapisms and the Diacetate of Lead in grs. iv. to viii. doses, combined in some instances with sulphate of Copper; cramps were immediately relieved by the application of morphia on a scarified surface over the lymphatics of the thighs.

Assistant Surgeon McTavish considers that "disease originated at the station," and adds "the disease was communicated to no town or village so far as I am aware. The virulence of the epidemic subsided on the 6th May, but the last case of cholera took place in one of the women of the Regiment on the 16th. I can attribute the cessation to no cause." Surgeon Major Sutleffe mentions that its departure was not marked by any atmospheric changes.

Edward Balfour,
Actg. Depy. Inspr. Genl. of Hospls.

III.

Table of Daily Admissions and Deaths from Cholera. By Robert R. Sutleffe, Surgeon Major, 5th Regiment N. I., Senior Surgeon, Thayetmyoo.

Day of Month.	European Troops.		Native Troops.		Followers.		Population of the Station.				Prisoners in Jail.	
							In Hospital.		Out of Hosptl.			
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	No. of Cases.	Deaths.	Admitetd.	Died.
21st April 1863.	1	1	0	0	0	0	0	0	0	0	0	0
22nd „ ...	1	0	0	0	0	0	0	0	0	0	0	0
24th „ ...	3	2	0	0	2	2	0	0	0	0	0	0
25th „ ..	4	3	0	0	0	0	0	0	0	0	0	0
26th „ ...	3	1	0	0	0	0	0	0	0	0	0	0
27th „ ...	2	1	0	0	0	0	0	0	0	0	0	0
28th „ ...	2	2	0	0	0	0	0	0	0	0	0	0
29th „ ...	2	2	0	0	2	1	0	0	0	0	0	0
30th „ ..	2	2	0	0	0	0	0	0	0	0	0	0
1st May „ ..	3	2	0	0	0	0	0	0	0	0	0	0
2nd „ ..	3	1	0	0	0	0	0	0	0	0	0	0
3rd „ ...	1	0	0	0	2	1	0	0	0	0	0	0
4th „ ...	3	1	0	0	1	1	0	0	0	0	0	0
5th „ ..	1	1	0	0	1	0	0	0	0	0	0	0
6th „ ...	2	2	0	0	0	0	0	0	0	0	0	0
7th „ ...	0	0	0	0	0	0	0	0	0	0	1	1
9th „ ...	1	0	0	0	0	0	0	0	0	0	0	0
11th „ ...	1	0	0	0	0	0	0	0	0	0	0	0
16th „ ...	1	0	0	0	0	0	0	0	0	0	0	0
Total...	36	21	0	0	8	5	0	0	0	0	1	1
Strength...	602		748		13		0		not known			

Thayetmyoo, 19*th June*, 1863.

IV. *Return of Cholera at the Station of Thayetmyoo.*

Date of out-break.	Whether originating at the station or apparently introduced by troops or travellers.	Weather at the time of out-break—whether seasonable or otherwise—state of atmosphere whether usual or extraordinary either at the commencement or during the continuance of the disease—whether hot, cold, or rainy—prevailing winds.	*Geological features of station—nature of soil—aspect of country, hilly, flat, open or wooded, dry or swampy waste or cultivated.	Whether the disease was general at the station or otherwise—nature of the locality where the disease showed the greatest development—also whether the disease has been of frequent occurrence at the station and the dates of out-break.
21st April 1863.	The 1st case reported was that of a boatman who had arrived from the Mandalay side of, and died at, Thayetmyoo. Cases were said to have occurred along the course of the River. There had been a few cases of Sporadic Cholera from last December 1862, both among Europeans and Natives. This continued till it prevailed as an Epidemic.	The temperature was at this time very high, no thunder or lightning—nor did the tests employed slew the slightest amount of Ozone in the air— some rain fell, about the early part of the Epidemic which greatly lowered the temperature, but appeared to make no immediate impression upon the disease.	The soil is sand-stone. The station is entirely cleared of jungle. About 3 or 4 miles distant, there is a range of hills, not very lofty, but very jungly. Station itself is very dry and quickly absorbent of water but little rain has fallen since the 1st of January—rain has been often observed falling copiously all round the station—which is belted with dense jungle.	The disease was confined chiefly to the European troops, viz., H. M.'s 3rd Bat. 60th Rifles and Royal Artillery. No cases occurred among the Native troops, I have been informed that there was an Epidemic of Cholera among the Detachment of H. M.'s 68th Regiment when stationed here, but I believe they only lost 4 or 5 men—this occurred in 1861. †

* Vide, also, Surgeon Major Ranking's Report on the Geology of this Station, in Madras Journal of Literature and Science, Vol. 5. pp. 55 *et seq.* (1859).—[Ed. *M. Q. J.*]

† It would appear to have occurred in 1859, not in 1861, vide Memorandum, p. 334.—[Ed. *M. Q. J.*]

Return of Cholera at the Station of Thayetmyo.

Whether any, and what, precautions were taken previously to the appearance of the disease and what subsequently.	Date of cessation and to what attributable change of weather, &c.	Whether the disease was communicated to any adjacent town or village, and if so, could it be distinctly traced to this source.	Usual food of the people and whether abundant or otherwise.	Employment of people most liable to the disease—whether severe or fatiguing—and, caste most liable to the disease.
Previous to the outbreak of Cholera continued attention had been paid to keeping the Barrack grounds clean—closing all cesspools and deodorizing all latrines and removing all objectionable nuisance. Cholera was raging in these clean and apparently healthy quarters, while the natives, surrounded by accumulated filth, were entirely free. The town has since been carefully attended to and after careful inspection it now appears to me that there are few native towns so clean.	The Epidemic may be said, to have ceased on 6th May though the last case of cholera occurred on the 16th of that month, its departure was not marked by any atmospheric changes.	I cannot trace either its origin or progress with any satisfactory certainty, but it appears to have kept close to the river, and along its course.	There does not appear any poverty—inducing starvation among the native population. The rations of the troops have been very good, the late Surgeon Sparrow at one period of the Epidemic suggested that the supply of malt liquor should be stopped. I did not approve of the suggestion—the men returned to their usual allowance after 2 days.	The duties of the troops were not injurious to their health. The duties are light and recreative amusements were found for the men, cricketing, quoits, &c. I must here be allowed to mention that Lieut.-Col. Roe, Commanding 3rd Bat. 60th Rifles, was most energetic during the progress of the disease—every thing was done which appeared conducive to health, he and his Officers were continually in the hospitals, day and night—endeavoring to cheer the sufferers with words of kindness and hope.

Thayetmyoo,
19*th June*, 1863.

Robt. R. Sutleffe, *Surgeon Major,*
5th Regt. N. I., Senior Surgeon, Thayetmyoo.

V.

Memorandum by Surgeon Major Best, 68th L. I.

In conformity with the request expressed in Memo. 1,019 dated the 18th of May, I beg to submit the following report from the records and other notes.

234 officers and men.

A detachment of the 68th L. I., strength as per margin, left Rangoon on the 27th of May 1859, to relieve a detachment of the 69th Regiment at Thayetmyoo, they arrived at that station on the evening of the 5th of June.

Sixty-two officers and men proceeded next day to Meaday, a Fort about four miles from Thayetmyoo on the opposite bank of the river. On the 7th of June, at ½ past 9 o'clock P. M., a man was admitted with Cholera; within two days 5 men were admitted, of whom 4 died; in addition to these, 6 cases of "Colica" (one an Officer) and 11 cases of Choleraic Diarrhœa were admitted, and about 25 treated out of hospital.—In the Company stationed at Meaday one death only occurred.—In the Native Corps the mortality was much more severe, the deaths amounting to 22.

At the commencement and during the journey the weather was cool and pleasant with slight showers, but as we proceeded the heat gradually increased, and when we arrived at our destination, the Thermometer ranged from 98° to 100, in the shade, in the heat of the day. On the evening that the first case occurred the Station was visited by a very heavy storm of rain with thunder and lightning.

The Barracks the men were placed in had not been occupied for a considerable period, and were not in such good order as they should have been. The day after the "Cholera" appeared other bungalows were fumigated and whitewashed, and the men immediately moved. Every sanitary precaution was taken that could be thought of, and every endeavour to keep the men employed and in good spirits.

No exciting cause could be traced to account for this outbreak, and the general impression that prevailed was that there existed some peculiar atmospheric influence.

Rangoon, 21*st May*, 1863. } T. Best, *Surgeon Major*, 68*th L.I.*

[We have placed at the heading of this Article the names of Messrs. McTavish and Griffith, each of whom held responsible charges during the time of this epidemic. We have not, however, considered it necessary to print their reports, in extenso as separate contributions, as they are quoted so freely in the

Report and *Précis* of Acting Deputy Inspector Balfour. We have thought it advisable to submit the documents placed at our disposal as fully as possible, in consequence of the painful interest attaching to so serious an outbreak at a station which has long been considered as one of the healthiest in British Burmah.

We cannot fail to notice certain discrepancies in the Meteorological Returns submitted by the different Medical Officers, and we are inclined to attribute these to inaccurate instruments rather than to want of care, for of the latter there is ample evidence.

As attention has been lately drawn to the unreliability of the Meteorological Reports hitherto furnished from almost all stations, we would suggest that, where double sets of observations are recorded, a perfectly accurate return would probably be obtained by careful comparison of instruments.—Ed. *M. Q. J.*]

Art. XIII.—*Observations on certain injuries of the Spine.*

By John Shortt, M.D., Zillah Surgeon, Chingleput.

These injuries are at all times formidable, more especially when complicated with fractures and dislocations of the bony case that protects the spinal marrow, or from concussion and compression of the cord itself; and in some few instances the whole of the above occurrences are present in one and the same case. For instance, the same injury that produces the luxation of a vertebra may not only cause fracture, but concussion and compression of the spinal cord also.

Fortunately these injuries, on the whole, are not of common occurrence, for the mechanism of the vertebral column, and the manner in which this bony chain is bound down by numerous strong ligaments and protected by powerful muscles, prevent its being readily injured by blows or shocks. The construction of the column by numerous separate pieces or vertebræ, and the elastic intervertebral substance that intervenes between each vertebra, all tend to break the force of concussion—or to resist any shock that these parts may receive so that only in extremely rare instances can injuries of this kind arise from indirect causes, and the force required to injure the spinal column by blows or accidents, leaving out those injuries produced by constitutional disease, must not only be direct, but the result of great violence to produce serious mischief in the part. Consequently these injuries for the most part not only baffle the skill of the Surgeon, but try the patience of the Physician, more especially in this country, from want of the necessary appliances to assuage the sufferings or mitigate the helplessness of the patient,—fortunately from the nature of the injury the pain is always trifling.

The medical man for the most part has to tax his own ingenuity and resources to make the patient comfortable, and prevent those terrible complications that arise in the shape of bed sores from pressure, &c. At Home air-cushions, water-beds, and bedlifts of different kinds, which cannot be procured in this country, are at the command of the Surgeon; even when these might be procured it would have to be at the expense of the medical man. I have been in the habit of using in several cases of bed sores a pair of water-tight *puckally* bags, these are half filled with water and laid on the cot and covered with two or three common cumblies, which makes a very good and comfortable bed, in such cases the cumblies remove the cold feeling caused by the leather bags. The only difficulty in such cases is to render these bags water-tight.

The following cases will illustrate certain points in practice as regards the nature and management of injuries of the class alluded to.

Case 1.

Fracture of the Spine.

Admitted at 11-30. A. M. on the 26th February 1858, a convicted prisoner, Æt. 34. The patient was carried to the hospital in consequence of an accident. Complains of severe general pains, more particularly confined to the loins and neck; is unable to use his legs; has complete loss of motion and sensation; can neither sit nor stand.

On examination he is found to have several abrasions about his back with some swelling about the loins. Pulse small and weak; bowels regular.

History.—States that he fell accidentally while drawing a gravel hand cart, and that the wheels of the loaded vehicle passed over his loins; at the same time the wooden box belonging to the cart struck him between the shoulder blades. He continued with perfect loss of sensation and motion of the lower extremities, retention of urine, bowels relaxed and involuntary. The bladder required to be emptied daily by the catheter, urine at first bloody, subsequently highly ammoniacal. A large sloughing bed sore formed over the sacrum. He continued to sink and expired on the 13th of March, fifteen days after the accident.

Treatment.—Stimulants were administered till the patient rallied from the shock, when he was put under calomel and opium: aperients and saline diaphoretics were also given.

Externally.—Hot fomentations and friction to the extremities.

Autopsy.—Examination of the body 12 hours after death. Body well nourished; has abrasions on both shoulders and on the outer side of right knee joint; these are superficial except that on the right scapula which is skin deep. A large ulcer, two inches in diameter, is situated over the sacrum, surface of body otherwise natural.

Head.—Not examined.

Chest.—Hypostatic congestion of both lungs, other viscera healthy.

Abdomen.—Except some slight extravasation of blood in the cellular tissue around the kidneys, the viscera were found healthy.

Pelvis.—The external and internal surface of the bladder has an ecchymosed appearance, the result of infiltration of blood between the coats with thickening of the wall. The bladder contained about 8 oz. of highly ammoniacal urine. On examining the spinal column, the muscles about the small of the back were infiltrated with blood and most of their fibres disorganized. A fracture extends transversely across the bodies of the last dorsal and first lumbar vertebræ with partial luxation of their articular surfaces. The fracture in the former passing close to the intervertebral cartilage, whilst in the latter across the middle of the body, the lower end of the fractured surface being slightly driven in and found compressing the spinal marrow.

The coverings of the cord itself were congested.

Case 2.

Chellen, Æt. 43, caste Pariah, trade labourer, admitted 1st August, 1862. Was brought to the Civil Dispensary from a village about ten miles distance from this, with the following statement: That about a week prior to admission he was carrying on his head, with the assistance of another man, the stipe of a palmyra palm. One end of the stipe which was eight feet long and 1½ in diameter, rested on the head of each, and he was in front when he stumbled and fell forward, and the palmyra stipe fell on him, striking him between the shoulders; he shivered and became speechless (insensible) and continued so for some time. On coming to again he found that he was quite helpless and could not move hand or foot, and had lost power and sensation in the trunk and limbs.

Present state.—Has a large bed sore nearly 2½ inches in diameter over the sacrum, the lower half of the trunk, in line with 10th dorsal vertebra, is somewhat tumid, more especially about the back; has neither power nor feeling in both his forearms up to the elbow joint; can move his arms imperfectly and raises them slightly: when this is done the forearms drop involuntarily by their own weight. The head, face, neck and upper part of chest and back, in line with the nipples, are sound, and are the only parts in which he retains motion and sensation: from immediately below this the loss of feeling and motion is complete. The penis semi-erect; on being touched priapism becomes complete. The bladder distended with urine. The sphincter ani relaxed and the stools apparently involuntary.

On examination nothing wrong can be detected along the spine; some slight superficial abrasion at the base of the scapula now cicatrized, and the swelling about the small of back seems to have been caused by the large bed sore. Beyond this swelling nothing abnormal present. Pulse soft, of a good volume, 87; skin cool; tongue clean, but slightly furred in the centre. Countenance heavy with a painful expression; slight swelling of the upper eyelids.

The patient is perfectly sensible and conscious of passing events; his intellect is clear and his breathing tranquil. Suffers no pain, but frequently deplores his helpless condition. The urine has to be drawn away by the catheter night and morning. At first there was some difficulty in getting the catheter to pass owing to permanent rigidity of the penis on being touched. This was eventually overcome. Under treatment, the tumefaction of the extremities subsided, the gums became tender, and he seemed to improve in health; but large sloughs came away from the bed sore, the sacrum was laid bare, and although the patient appears weaker he takes his food well and sleeps soundly.

On 12th of August, he had a slight convulsive attack which scarcely lasted a couple of minutes. These short convulsive fits continued to recur three and four times a day, but were always of brief duration. The patient became weaker and expired in one of these fits on the 20th ofAugust.

Treatment.—The treatment consisted at first of small doses of calomel, opium, and tartar emetic. Purgatives, tonics, stimulants, and narcotics with nutriments. Externally hot fomentations and stimulating frictions.

Autopsy.—The body was examined eight hours after death. It was that of a spare made man and was tolerably well nourished, except the abrasions and bed sore there were no other marks about the body.

Chest.—On opening this cavity the lungs were found greatly collapsed with hypostatic congestion at their posterior surfaces. *Heart* small, empty and free from disease.

Abdomen.—Nothing abnormal was found in the viscera of this cavity.

Pelvis.—The bladder was greatly hypertrophied and deeply infiltrated with dark blood; the mucous lining of the bladder seemed rough or denuded in some places and it contained some dark colored urine, extremely offensive and ammoniacal.

Examination of the Spine.—No *fracture* or other injury of the bones could be traced, but the bodies of the first six dorsal vertebræ were infiltrated with blood. On removing the muscles the second layer was found slightly infiltrated with blood, and on removing the laminæ and laying open the spinal canal the membranes were congested and thickened, there was an absence of the cerebro spinal fluid, the cylinder of the spinal cord was greatly flattened, soft and pulpy, the slightest touch destroying its integrity; this condition was found to extend from the 6th cervical to the 5th dorsal, the other portions of the spinal marrow were firm and natural in appearance and colour.

Case 3.

Rookamah, Æt. 24, caste Gentoo, the mother of three living children, admitted into the Civil Dispensary on the 10th November 1862, was brought to the hospital on a cart from an adjoining village some 15 miles distant from this, with complete loss of power, motion, and sensation in the lower extremities. Pulse small and feeble; skin natural, that of the lower extremities 2° Far: lower than that of the trunk; tongue furred with red tip; bladder distended and the urine dribbling away; bowels stated to be relaxed.

History.—States that about five days ago, whilst she was plastering the floor of her house with a mixture of cowdung and water, the rafter of the house suddenly gave way, and a beam, about five feet long and one thick, struck her on the back. She felt sick and faint, and on the removal of

the timber by her friends she was found quite helpless, and had lost all power and feeling in the lower extremities. Some native remedies were applied to her back as well as administered internally, but not giving relief she was brought to the Dispensary for treatment. On examination a projecting point was evident, which on steady pressure seemed to disappear, but returned again on removal of the pressure.

The loss of motion and feeling was complete up to the seat of injury, about the 10th dorsal vertebra.

The patient was respectably connected and surrounded by a host of male and female relatives; for two days they would not allow of the urine being drawn off by a catheter, simple pressure over the region of the bladder caused the urine to dribble away. On the third day the catheter was had recourse to, the bowels were obstinately costive and required the use of drastic purgatives to get them to act. A straight padded splint was fitted to the spine, but with difficulty maintained in position, and the usual antiphlogistic treatment to counteract inflammation was had recourse to. As her general health began to improve, there also appeared some signs of returning power and feeling in the lower extremities, when her friends became clamorous for her removal to her own village, and took her away on the 23rd of December, after having been one month and thirteen days under treatment.

About a month ago I heard she was better and able to go about with the assistance of a stick. Although anxious I could not get the opportunity of seeing her again.

These cases are full of interest. In case No. 1 the fracture at once accounted for the symptoms that shewed themselves. Case 2 is the most interesting, the limits to which the powers of feeling and sensation extended could be defined most exactly by the drawing of a cord around the trunk in line with the nipples. The breathing did not seem affected. Although the symptoms were more marked than in No. 1 and I fully expected to find fracture, there was none. The blow seems to have produced concussion, and probably effusion of blood followed by compression of the spinal marrow, the bodies of the vertebræ gave indications of deep infiltration, and the thickening of the covering of the cord and soften-

ing of the spinal marrow were no doubt the results of inflammation.

In case 3 I carried out a series of experiments as to the temperature of the body above and below the seat of injury. Unfortunately I have mislaid the notes I made at the time, but I distinctly remember that there was a loss of 2° below the seat of injury.

With female caste patients, and more particularly with those respectably connected, there is always much difficulty in carrying out the treatment satisfactorily; had the patient continued some time longer it is possible she would have done well. However, I was glad to hear that she had so far recovered as to be able to go about with the assistance of a stick, but I should have felt better satisfied if I could have seen and examined her myself: then I should have been in a position to ascertain the exact extent to which recovery had taken place.

Art. XIV.—*On the treatment of Asiatic Cholera by the internal administration of Condy's Disinfecting Fluid.* By E. D. Evezard, Acting Zillah Surgeon, Masulipatam.

(Communicated by the Principal Inspector General Medical Department.)

I desire, on the present occasion, to state briefly the circumstances which have led me to adopt the somewhat bold, but I am happy to say at present successful, measure of giving Condy's Fluid in large doses *internally* in Asiatic cholera. I do so in order to recommend its further trial by others.

About nine years ago when at Mergui, I was struck by the circumstance, which no doubt has been observed by others, that the cholera ceased upon the accession of a violent thunderstorm. In October last year, when there was cholera among the troops in the Fort, I was pondering over some notes on a lecture which I heard some years ago from Faraday on the discovery of Ozone and its connection with the electric smell and its probable influence on disease. I had observed, too, that the cholera always came in unseasonable weather, and during the land winds said to be deficient in ozone. I attempted to produce ozone by the Æther

method at the bed side of the patient and also by the use of different disinfecting fluids with, as I thought, the marked success of preventing the spread of the disease.

Since that time I have been casting about for some way of introducing ozone internally.

Until lately I had never seen Condy's Fluid; but soon after taking charge of the Civil Dispensary I called for some disinfecting fluid, as my hands were smelling from some putrid matter and they brought me Condy's. On mixing it I observed the strong smell of ozone. From its color the substance appeared to me to contain manganese, I tasted it and found it to be alkaline and not very disagreeable. I then determined to try this in cholera internally. Nearly all my Medical subordinates were against this—they having heard it was poisonous, although they could not tell me why it should be. I thought that the alkali might be *Baryta*, as the fluid had somewhat the appearance of permanganate of Baryta, I tested it with Sulphuric Acid and found no precipitate. I carried a bottle of it with me whenever I was called out to patients, but was almost afraid to use it except as a disinfectant.

I was one day, however, called from attending two children, who were recovering from cholera under the use of stimulants, &c., to a dancing girl who was in the *last* stage of the disease.

When I arrived I had nothing but a little bottle of Condy's fluid in my pocket, this was at about ½ past 5 o'clock in the evening; the Native physicians had given her up. I gave her every half hour about half a drachm of Condy's fluid in water without waiting for it to mix with the water. The patient revived *so* much that at 10 o'clock the relations told me she was hot and feverish; she, however, sunk at about eleven from exhaustion. This was rather discouraging, but it demonstrated that at least the medicine did no harm beyond producing a slight burning sensation in the stomach. The vomiting ceased entirely after the *first* dose. I reflected that the manganese after being precipitated in the stomach might eventually even act beneficially on the liver, and the alkali might give *its* individual benefit to the blood.

I then made the subjoined memorandum (vide p. 343) and sent it round to all my Medical subordinates at the station. Fortunately we have had few cases treated in any of the

Hospitals ; but all the cases treated as above recovered to the number of 7 or 8 in the Fort, (including Serjeant Croly of the Veterans who, unknown to me, had been allowed to remain in the Fort;) three women at the Dispensary ; four out-patients attended by the Collectorate Dresser, and a Brahmin woman in the Town attended by the Jail Dresser, have recovered. It will be seen that I have been fearful of entirely giving up stimulants, but in the last case mentioned the patient had only taken during the day 3 oz. of brandy of her own accord, the Dresser gave her nothing else but Condy's fluid. After the first dose there was no vomiting and only two cholera motions.

I am quite aware that these remarks are far from conclusive, but still I think I may be deemed right in entreating a further trial by others. I shall report if this treatment continues successful, but the cholera is raging so fearfully that there is quite a panic among the natives and they rarely come for treatment. Notwithstanding that they take large quantities of brandy, the majority of them die.

The stimulating mixtures and usual Cholera pills have been of course supplied by me to all the different Moonsiffs and Police Officers, &c., and are said to have done good to those suffering from premonitory symptoms.

P.S.—Since writing the above several other cases have occurred equally successful. A sepoy of the 42nd, admitted at day-break pulseless from cholera, revived rapidly on the use of Condy's fluid in drachm doses, and is now only weak and has had no return of the symptoms since 6-45. It is now 2 P. M. As yet there has been no fatal case since I determined on this treatment, but I must not be too sanguine.

The following is the Memorandum directing the general treatment to be adopted by my Subordinates.

Treatment to be adopted in Cholera in all the Hospitals at Masulipatam.

STIMULANTS.

℞ Tinct. Lavand. Comp. ℥ iss.
Æther: Sulphuric : ℥ i. } Or Chloric Æther ℥ i.
Chloroform ℥ i. }
Ol Menth : pip. ℥ ss.
Morphiæ Hydrochl. grs. vi.
M.

Dose 15 to 20 drops in half an ounce of water, repeat it every hour or half hour according to circumstances, and let the patient swallow a little cool milk.

Drop half a drachm to a drachm of Condy's fluid into half tumbler of water, and give immediately without allowing time for it to mix, and repeat every half hour.

If the cramps make their appearance rub equal parts of Mustard oil and Turpentine to the extremities. If the patient is unable to swallow give the Condy's fluid a drachm to half a tumbler of water in a metal clyster, without giving time for it to mix. This should be followed by enemas of mutton broth Oss. Quinine ℈ i. dissolved in half an ounce of Brandy. A drachm of Tinct. Opii. may be added if the sphincter is irritable.

[Note by the Editor.]

It is doubtless within the knowledge of the majority of our readers, that officers in the medical employment of Government have been ordered to adopt experimentally, the line of treatment advocated by Mr. Evezard. Feeling the desirability of placing before them the grounds upon which his recommendation is based, we solicited that his original report might be placed at our disposal for publication. Our request was most promptly and courteously complied with, by the officer at the head of the Medical Department of the Madras Army.

We are unwilling to allow the matter to be placed before our readers in an incomplete form, and as the chemical qualities of "Condy's Disinfecting Fluid" may not be generally familiar to members of the profession in this country, we venture, at the risk of slight reiteration, to refer our readers to a brief notice (contained in the 6th Vol. of this Journal) of Mr. Condy's work upon the properties of this fluid, which is in reality a solution of the alkaline permanganates, and which is not only a deodorizer, but also a disinfectant. In Condy's fluid we have a means of producing ozone which may be equally applied to the purification of contaminated air, or to the chemical reduction of vitiated animal secretions.

The instructions contained in Mr. Evezard's communication are sufficiently plain to render it unnecessary for us, to do more than to direct attention to the fact, that any

considerable amount of impurity in the water employed to dilute the permanganate solution, might possibly somewhat diminish the benefit to be expected from its use. The timely preparation of a moderate amount of carefully distilled water, is therefore to be strongly recommended to all persons anxious to adopt this mode of treatment; and we may add that the use of large glass syringes for the purpose of administering injections, is much to be preferred to all other apparatus for this purpose, as these latter are likely to contain metallic, animal, or vegetable bodies as a portion of them. For the same reason, the administration of this remedial agent should, we think, be the first step in the treatment of such cases.

The value of the disinfecting treatment of cholera was admirably shewn by the success which attended it when employed by Dr. Mackay, who has recorded in our 6th Volume, pp. 451 et seq., a series of cases where "*solution of chlorinated lime*" would appear to have been most efficacious in the treatment of cholera. As we then remarked it would not be justifiable to draw any inference from so small a number of cases; but surely the further confirmation of this line of practice, afforded by Mr. Evezard's experience, is sufficient to warrant, if not to demand, a full, careful and impartial trial of this novel, but apparently most successful, agent for the cure of this disease.

We trust in a future number to be able to lay before our readers the purport of any Reports which may be supplied to the Head of the Medical Department of the Madras Army, upon this most interesting subject. We may, however, at the same time, express a hope that, we may be favored with a detailed account of the experience of any Medical man, who may be in a position to give the medicine a fair trial. This might result in our arriving at some conclusion, as to whether Condy's Fluid might be employed indiscriminately, or whether its use should really be restricted to a limited class of cases.

It would, perhaps, also be well, if those employing this remedy were to bear in mind that it is a powerful destroyer of animal tissue, and that its too free use might possibly be followed by after-consequences of a serious character. On this point, nothing but extended experience, and the most careful observation of patients during convalescence, can give us efficient information.

As Condy's fluid is probably available to most of our readers, and as they may desire to understand the rationale of its chemical reaction, we quote from the author's observations four formulæ, showing the result following the chemical combination of the essential principle of this fluid, with ærial impurities, or those contained in certain organic bodies.

$$HO,C_7N_5 + 7\ (Mn_2O_7 + KO) = HO + 7\ CO_2 + 2\ NO_5 + 14\ MnO_2 + 7\ KO$$

Animal effluvia.	Permanganate of Potash.	Water.	Carbonic acid.	Nitric acid.	Binoxide of Manganese.	Potash.

$$KO,Mn_2O_7 + 3\ H.S + CaO2CO_2 = 2\ (Mn,O_2) + 3\ S + CaO,CO_2 + 3\ HO + KO,CO_2$$

Permanganate of Potash.	Hydro-sulph: acid from organic matter.	Bicarbonate of Lime.	Binoxide of Manganese.	Sulphur.	Carbonate of Lime.	Water.	Carbonate of Potash.

$$2\ (NaO,Mn_2O_7) + 3\ H\ S + 3\ (N\ H_3\ H\ S) + 5\ (C_4O\ 2\ CO_2) = 4\ (MnO_2) + 6\ S + 5\ (CaO,CO_2) + 6\ HO + 2\ (NaO,CO_2) + 3\ (NH_3\ CO_2)$$

Permanganate of Soda.	Hydro-sulph. acid.	Hydro-sulphuret of Ammonia.	Bicarbonate of Lime.	Binoxide of Manganese.	Sulphur.	Carbonate of Lime.	Water.	Carbonate of Soda.	Carbonate of Ammonia.

$$C_4O,Mn_2O_7 + 3HS + C_4O\ 2CO_2 = 2\ (MnO_2) + 3\ S + 2\ (CaO,CO_2) + 3\ HO.$$

Permanganate of Lime.	Hydro-sulph. acid.	Bicarbonate of Lime.	Binoxide of Manganese.	Sulphur.	Carbonate of Lime.	Water.

(Vide pp. 38,52,53 and 55, respectively, of *Condy on Air and Water.*)—[ED. *M. Q. J.*]

Art. XV.—*A Case of Ileus—relieved by Insufflation of the Bowels with air.* By W. H. Morgan, Assistant Surgeon, 23rd Regiment Light Infantry.

20th July, 1863.—Jaffer Khan, a private in the 23rd Regiment, was brought into hospital at 4 P. M., complaining of severe pain in the abdomen which came on about 11 o'clock in the forenoon. Patient states that his bowels were moved at noon, and that the stool was scanty and contained some blood.

℞ Ol. Ricini ℥ss. immediately.

To have turpentine stupes to the abdomen should the pain continue.

6. P. M.—Bowels not moved since the oil was taken.

To have an injection of

Ol. Ricini. ℥ ii.
Aquæ fervent: O i.

This brought away some *scybala.*

21*st.*—Passed a restless night. He has an anxious expression of countenance and rolls about in bed as if in pain. Abdomen tympanitic, recti muscles tense, the patient can bear pressure on the former. There is no external manifestation of a hernia. Hypogastrium dull on percussion, the man passed a quantity of urine during the visit. Pulse 96, small and weak; extremities cold; vomited three round worms last night.

Continue the stupes three or four times a day.

To have a warm hip bath, and while in it an injection of castor oil.

Vespere.—Vomited all the water he drank since this morning, but retained a draught of Chloric Æther and Ammonia which he took at noon. At ½ past 12 o'clock he took a pill of

Calomel gr. x.
Opium gr. i.

At 3 P. M. the skin was warm; pulse 144; and the patient quieter. Several galvanic currents were passed through the abdomen and a small bleeding (℥ iv) tried without any effect on the bowels.

℞ Calomel gr. ii.
Opii. gr. ½ ft. pil; one every 3rd hour.

22*nd*.—Vomited about O ii. of stercoraceous matter at five last evening and another round worm. Patient slept well last night, the vomiting having greatly relieved him. Abdomen still tympanitic, pressure can be borne over every part of it; pulse 96.

Continue pills of calomel and opium every four hours.

To have a large injection of castor oil and warm water at noon.

Vespere.—Vomited a quantity of greenish stuff shortly after taking the injection. The latter seemed to pass as far as the *cæcum* in the right iliac region and no further. It brought away some more scybala.

From this date to the 26th there was no stercoraceous vomiting; the calomel and opium pills were continued, as also injections of castor oil and warm water. The latter usually brought away very small quantities of feculent matter. On the morning of the 26th I detected some fragments of a tobacco leaf in the pan, and understood from the patient that he had previously introduced them into the rectum with his fingers.

27*th*.—Vomited O iv. of stercoraceous matter yesterday; pulse 96.

Continue pills and enemata.

28*th*.—The stercoraceous vomiting continues; slept better than usual. Patient was put under chloroform and four pints of tepid water injected into the bowels.

℞ Calomel gr. iii.
Ext. Colocynth co. gr. xii.
Ipecac. gr. iii.
Ext. Hyoscyam. gr. iii. ft. pill vi.
One to be taken every four hours.

These pills were discontinued on the following day, and calomel and opium continued as before, with enemata. There was no change in the symptoms, and I despaired of doing any thing more for the patient. He was seen on the morning of the 31st by Drs. Reynolds and Kennedy, and as a last resource it was resolved to inflate the bowels with air. At 3 P. M. on that day by means of bellows from the "suspended animation apparatus," and with the assistance of Assistant Apothecary Callaghan, a quantity of air was pumped in *per anum*, until coils of intestine could be distinctly felt by passing our hands over the abdomen.

The patient who was questioned during the operation said he felt relieved, but to us he appeared in *articulo mortis*, and I left the hospital expecting to hear of the man's death before my next visit. Great was my surprise, however, at learning on the following morning, that since 10 P. M. he had had four copious feculent motions. Since this he continued to improve, and was discharged. I ought to state that the gums were tender on the 1st of August, the day after the bowels were relieved.

The mere fact of a case of *intussusception* being published and commented on eleven years after its occurrence, as was done by Surgeon Major Blacklock in a recent number of this Journal,* would lead to one of two inferences either that similar cases are seldom met with, even in such large establishments as the General Hospital at Madras, or that if they have occurred that there has been nothing in them deserving of notice. Had the patient, whose case is above detailed, died, I would very likely have contented myself with merely recording the issue in my Hospital Journal, but his recovery under the circumstances may justify a few passing observations.

The patient's statement, on admission, that he had a stool at noon containing some blood, would point to intus-susception as the affection in this case, according to Dr. Watson† who says:—"I have observed this peculiarity in most of the cases in which I have known it produced by intus-susception, that after severe and sudden symptoms of obstruction and inflammation, *blood* has been passed by stool." On the other hand the inflammatory symptoms were not marked; nor was there any tumor in the abdomen, as in the case of the seaman Michael reported‡ by Mr. Blacklock, that would have enabled me to arrive at absolute certainty on this head.

Practically the case deserves notice from the relief that followed insufflation of the bowels with air after other measures had failed. This is by no means a novel remedial measure, nor is there any difficulty in its application. When the *enormous* distension that the human intestine is capable of is borne in mind, (and those who have

* Madras Quarterly Journal, Vol. VI., Art XII., page 309.
† Principles and Practice of Physic, Vol. II., Lect. LXXI., page 489-90.
‡ Loc. Cit. p. 313.

seen it in the dissecting room will not cavil at the expression) it is a matter of some surprise that inflation is not oftener tried in cases of obstruction. Any one who will take the trouble of wading through the cases of intestinal obstruction recorded in the "Lancet" from 1845 to 1850,* will see how signally this means has been postponed to others decidedly mischievous if not dangerous.

The following is an abstract of the treatment in one case taken at random. Castor oil, croton oil, elaterium, scammony and *several other kinds of purgative medicine.* Enemata of castor oil, of sulphate of magnesia, of magnesia with infusion of senna, and of turpentine and tincture of assafœtida. A large blister to the abdomen and application of strong mercury ointment to the blistered surface three times a day. *Ex uno disce omnes.* Inflation of air was tried in only two out of the numerous instances met with in the volumes of the "Lancet" above mentioned; and though the writers acknowledge that it has been beneficial in other instances, they do not seem to put much faith in it.

Dr. Henderson of Perth, after repeatedly injecting water through rather a complicated apparatus, devised by him for the purpose, says† :—"I had recourse to the mechanical expedient of my own lungs to force the fluid forward, and notwithstanding all the power I was capable of exerting, it was a few seconds before I felt the obstruction give way, and even then I did not desist until the patient screamed out that he felt it 'boiling in his stomach' and that he should certainly burst."

Yet in spite of this Dr. Henderson remarks, "Air has been employed for the same purpose; I myself have had recourse to it, and in one case successfully when other means had failed; but the column of water is so much more manageable, so much more certain in its effects and so much less distressing to the patient, that until some more effectual method of treating this formidable complaint be discovered, I shall continue to practise it and would humbly recommend all my professional brethren to do the same." It is quite clear from the narrative that the column of water had failed, and that it was when *air* was blown in, that the patient screamed out and the obstruction was relieved.

* These Vols. are referred to as they happen to be at hand.
† Lancet, September 13th, 1845.

Mr. E. Crisp in a paper read by him before the Physical Society of Guy's Hospital, says* "that the injection of air into the anus in a few instances of ileus appears to have had a happy result;" but in one of the cases adduced where this was tried at his own suggestion, he expressed himself disposed to cut into the abdomen and search for the obstructed part.

Turning from ephemeral cases to systematic writers, we find among other morbid appearances in ileus detailed by Dr. George Gregory† (in rather an ancient edition of his work it must be acknowledged) "that the intestines have been found not contracted but inordinately *distended*;" and further on, "A case is recorded in which ileus was relieved by the employment of an exhausting syringe introduced into the rectum. This remedy appears to be deserving of further trial."

Dr. Watson mentions inflation as an expedient which is sometimes successful. "As a *last resource* (he says in a case recorded by him‡ and since quoted by Mr. Blacklock‖) and with a faint hope of rectifying the mischief it was proposed to inflate the bowels with air. This was done about midnight by Mr. Erichsen by means of the bellows used by the Royal Humane Society for producing artificial respiration. * * * * * The inflation was continued for some minutes, yet the abdomen did not become much distended. After it was over the patient seemed easier, and in about two hours she passed a natural fœcal stool." Mr. Erichsen says,¶ "The inflation of the obstructed intestine by the injection of air into the rectum, has been recommended in cases of intus-susception, and occasionally been practised with success." He then gives the instance already quoted from Watson.

While readily conceding that inflation of the bowels with air is not applicable to *every* case of obstruction, a perusal of recorded cases leads me to think that it is neglected in many, and the object of this paper would be answered if any of my professional brethren are induced to give it a trial, of course after purgatives and enemata, but

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* Lancet, May 29th, 1847.
† Theory and Practice of Medicine, by G. Gregory, M. D. 5th Ed. 1839, p. 639.
‡ Principles and Practice of Physic, Vol. II., Lec. LXXI., p. 496.
‖ Madras Quarterly Journal, Vol. VI., p. 320.
¶ Science and Art of Surgery, 2nd Ed. 1857, p. 857.

before having recourse to the lancet, or to the constitutional effect of mercury. The earlier the application the greater will be the chance of breaking up the adhesions that are found in some of these cases. Besides being more manageable than water, air distends the bowel more equably and the tendency to flow out in a jet is not so apparent. I do not know why, but I had no great faith in insufflation until I tried it in this instance, and so well did it answer the purpose that I have been induced to place it before the readers of this Journal. There may be something in the testimony of a contemporary that would produce more effect on some minds than that of twenty witnesses in remote times and places.

In the case under notice the nozzle of the bellows was dove-tailed into the distal end of an elastic tube (found in the stomach pump apparatus supplied to every Hospital), introduced as far into the rectum as possible; a strip of lint was wrapped round the pipe as it escaped from the anus so as to make that aperture air-tight.

Before concluding I would draw attention to the fact that the mouth was affected on the day following that on which the bowels were relieved. Probably the system was under mercurial influence on the preceding day, and this might furnish a doubt as to whether the relief of the obstruction was due to inflation or to mercury. Mr. Erichsen on the treatment of Acute Intestinal Obstruction says,* "The only plan that appears to me of any value is an antiphlogistic one; the continued administration of calomel and opium with the free application of leeches to the abdomen followed by fomentations will be of considerable service, and in some cases even the most hopeless and complicated will afford satisfactory results." He then gives a very complicated case treated in this way, and adds that "on the *tenth* day the obstruction gave way, and the bowels acted."

It is singular that the obstruction in the case under consideration should have been relieved also on the tenth day, after nearly similar treatment together with the insufflation of air. To avoid any false conclusions it would be desirable to have an instance where inflation has been tried without mercury, and I would urge the publication of any such case by those who may happen to have had one under treatment.

* Op. Cit. p. 851.

Art. XVI.—*On the differential diagnosis between Abscess of the Liver and certain affections of the Lungs.* By Surgeon Major J. L. Ranking, attached to 23rd Brigade Royal Artillery.

(Read before the Medical and Physical Society of Secunderabad, September 5th, 1863.)

"This observation is worth remembering—sharp pain occupying the right hypochondrium belongs oftener to the pleura than to the peritoneum. I have known several instances in which such pain was erroneously supposed to be a sign of hepatitis, when, in truth, it resulted from inflammation of the pleura."*

"But now a days we need have no difficulty in making the diagnosis. The ear will tell us if we employ auscultation and percussion whether the contents of the chest or of the belly are suffering, and my own experience has taught me that sharp pain, with feverishness occurring on the debateable ground of the right side, denotes pleuritic inflammation, far more often than it does hepatic."†

These prefatory quotations from a standard work have been selected as texts to a few remarks upon a case which lately occurred in our practice.

Instances of errors in diagnosis in connection with hepatic abscess are not rare—or at any rate a sufficient number are before the profession to establish the fact that difficulty is occasionally experienced.

Few men care to be the chroniclers of their own mistakes, and hence many cases of this nature never see the light of publication.

"But a more useful lesson," it has been truthfully remarked, "is often taught by a discovered error in diagnosis, than by a successful case."

Acting upon this hint, I do not hesitate to submit for professional criticism a case which peculiarly illustrates some of the difficulties of diagnosis, which attach, to what Dr. Watson has termed, the "debateable ground" of the right hypochondrium. "Errors of diagnosis have happened and will continue to to do so from the intricate difficulty of these cases, and from no want of skill or care on the part of the

* Watson on the Principles and Practice of Physic. Vol. II., p. 112, 4th Ed.

† Op. cit. Vol. II., p. 587.

surgeon, and those will be the most charitable in their criticisms upon the mistakes of others, who have most frequently had occasion to experience these difficulties in their own practice."*

I can, in my own experience, though not in my own practice, call to remembrance three cases in which abscess of the lower lobe of right lung was mistaken for abscess of the liver opening through the diaphragm into the lung—cases in which the existence of hepatic abscess thus evacuating itself had been confidently diagnosed by surgeons of admitted ability and matured experience, but in which *post-mortem* examination showed that no disease existed, or had existed, in the liver, but that the affection was pulmonic from first to last.

Cases of the same character are published in the Third and Fifth Volumes of this Journal (cases communicated by the Principal Inspector General of the Department, doubtless on account of the high interest attaching to them and the important lesson they teach), in which "the symptoms throughout so strongly resembled those of chronic abscess in the upper part of the liver, discharging its contents slowly through the lung, that it was not possible to distinguish between them during life either from the constitutional or physical signs."†

But although it may be admitted that it is sometimes difficult, may I say impossible, to diagnose inflammation occurring in the "debateable ground" of the right side, few Indian surgeons will adopt Dr. Watson's opinion, that sharp pain occupying that region belongs *oftener* to the *pleura* than to the *peritoneum*, that is, the peritoneal covering of the liver. That it more frequently indicates pleurisy than hepatitis.

It may hold good in Europe, where hepatitis is comparatively infrequent, and pleuritis common; but in this country sharp pain in the right hypochondrium may safely, with very few exceptions, confidently be associated with inflammation of the liver or its capsule—with hepatitis or perihepatitis.

Still, it is very important to remember that it is quite possible to mistake a pleuritic stitch, for hepatic inflamma-

* The Science and Art of Surgery. By J. L. Erichson, 3rd Ed., p. 538.

† Madras Quarterly Journal of Medical Science, Vol. III., p. 412.

tion—a mistake more likely to occur in this country, where every pain in the right side is referred to the liver.

A case in which all the resources of our art wielded by a very able physician failed to establish a correct diagnosis, came somewhat recently under my cognizance, and which strongly illustrates the difficulty of diagnosis in some cases.

I was invited to be present at the autopsy of a patient confidently predicted to have died of hepatic abscess—a case, I may further add, which was to demonstrate to a Medical officer of recent arrival in the country the existence of hepatic abscess, an instance of which he had not up to that period met with. No hepatic disease existed, but the lower lobe of right lung was hollowed out into a large abscess!

Believing then that great difficulties occasionally surround the differential diagnosis between abscess of the liver opening into the right pleural cavity, or right lung, and pneumonia of the lower lobe of that lung terminating in abscess or violent pleurisy with empyema, I do not hesitate to lay before you the details of a case in which my own diagnosis was at fault.

A Case of Chronic Pleurisy and Empyema, simulating Hepatic Abscess opening into the right pleura. Thoracentisis and partial evacuation of the purulent collection —Death—Autopsy.

Mrs, M——, wife of a Bombardier of the Artillery, aged 45 years, — years resident in India, and the mother of four children, was admitted into Hospital on the 12th of April 1863, for Chronic Hepatic affection, which she had long been supposed to be labouring under.

History.—During the year 1862, Mrs. M—— was twice in Hospital under the care of Mr. Wither of the B. Battery 23rd Brigade, who furnished me with a sketch of her Medical history, and from which the following is an extract. "Pain in the right side extending to the shoulder, and the liver was enlarged, but the symptoms were not of an acute nature, and yielded to treatment by blisters and mineral acids. She did not on either occasion complain of cough, difficulty of breathing, or oppression at chest. About three months previous to her first attack, while on the march, her cart was upset and she was thrown out with some violence, but beyond being much shaken and somewhat bruised,

she had apparently received no serious injury, though for some weeks she complained of pains in the back and inability to sit up long without support. Since then she complained more or less of pain in her back. On arrival at this station in February last she came into Hospital suffering from diarrhœa of a dysenteric character."

Details of Case.—I took charge of the case from Mr. Wither early in March last, at which time she complained principally of a lax state of the bowels with hepatic uneasiness, and the liver was found to extend about three fingers breadth beneath the margin of the ribs, and was tender on palpation. She was considerably emaciated; subject to chills and night sweats (hectic in fact). The complexion was muddy and the conjunctivæ were stained with bile pigment. She was also subject to severe spasmodic pains of the nature of colic, and she brought to notice that she had at times a protrusion at the umbilical region. At an examination during the existence of one of her attacks of colic, I ascertained that there was a conical, elastic, tumour occupying the umbilical region, the umbilicus itself being at the apex. The tumour was evidently intestinal, indeed the outline of the bowel could be traced by the eye through the attenuated abdominal parietes. It could be moreover reduced just as an umbilical hernia might be reduced, and was felt to pass between what was considered at the time to be the margins of an opening in the recti muscles. It conveyed all the tactile impressions of a reducible umbilical hernia. It was in fact reduced and retained by a pad and bandage with great comfort to the patient. She could give no history or account of its origin, but said that it appeared after, though not actually at the time of, the accident above alluded to.

The treatment at this time was directed towards the arrest of the diarrhœa, the removal of the hepatic pain and invigoration of the general health. She improved materially, lost the diarrhœa and hectic, and though still in delicate health and with a permanently enlarged liver, as indicated by its encroachment upon the abdominal space, she was, at her own request, discharged from Hospital on the 14th of March. During this period she had no cough, no difficulty of respiration, or any symptoms directing attention to the chest—facts necessary to be remembered in connection with the sequel.

She enjoyed pretty good health till the 12th of April

getting about her usual domestic occupations, &c., but on that date came to hospital again complaining of pain and tenderness of the right hypochondrium.

The liver was found to extend fully three fingers breadth below the costal margins, and was very tender on pressure. She suffered much also from flatulent distentions of the bowels and from the intestinal protrusion, which was at this time frequently examined and still considered to be an umbilical hernia.

Blisters and turpentine stupes, followed by Iodine paint to side; Nitro-muriatic acid with warm tonic aperients, and careful nutrition with a pretty liberal allowance of wine benefitted her considerably, and night sweats, which were again experienced, moderated. She was never however without pain on the the right side, and the border of liver was full and tender, dulness extending two and half inches below the ribs, and as high as the nipple. *There was no cough and no dyspnœa.*

On the 30th of April she fell back again, and the report that day is "a good deal of pain and tenderness in the hepatic region. There is some enlargement of the side and the border of the liver extends three fingers breadth below margin of ribs." On the third of May *bilious vomiting* set in, and continued for two days, and during this time the volume of the liver increased, forming a distinct tumour in the right hypochondrium, which was so tender that examination of it could scarcely be borne.

Between this and the 27th of May she again improved generally, but the tumour acquired larger dimensions, and the edge of the liver could be felt, and indeed traced by the eye, through the attenuated abdominal walls, from just above the right anterior superior spine of the ileum obliquely across to the epigastrium to the left hypochondrium. There was still no cough and no dyspnœa. I should add that about this time, the gall bladder full of gall stones, was detected as a distinct tumour beneath the edge of the liver.

During the night of the 27th she was seized with violent, stabbing pain in the right side, attended by extreme difficulty of breathing, and distressing palpitation of the heart. I found her at day light (I was not called at the time of the first accession of pain) sitting up in bed with a most anxious expression of countenance, with urgent dyspnœa and violent palpitation of heart. She was bathed in cold

sweat and the pulse was 120, small, and intermittent. The distress was so urgent that I could make but a rapid examination. The whole right chest was dull to the apex. The intercostal spaces were bulged and the ribs separated. No air could be detected entering even the upper lobe of the lung. The heart beat fully two inches to the left of its normal site, and the hepatic tumour was even more prominent.

I expressed the opinion that an abscess of the liver had burst into the right pleura. Under stimulants and antispasmodics she rallied somewhat. The pulse the next day fell to 90, and the dyspnœa and cardiac distress moderated. She could not bear any further physical exploration, but simple inspection satisfied me that the right pleura was full of fluid. On the 31st she was still better and could bear examination which only confirmed the opinion before expressed. On the 1st of June she was not so well. The pulse had got up and cold drenching sweats returned. Dr. Maule saw the case with me and also Mr. O'Leary, who happened to be on duty at the Artillery Hospital, and both agreeing with me on the propriety of tapping the chest. I entered a parcentesis thoracic trochar in the 6th intercostal space on the axillary line, at which spot there was evident fluctuation and drew off about 6 oz. of laudable pus. The canula was left in: and the side covered with a poultice into which pus continued to flow, and decubitus on that side was enjoined.

The operation gave great relief, the respiration became more free, the pulse fell 20 beats, the patient's expression improved, the drenching sweats subsided. Wine was ordered *ad libitum*, a bottle being taken in the 24 hours succeeding the operation, with concentrated Beef tea as nutriment. Pus not flowing so freely as I wished, an elastic bottle with stop cork was used at regular intervals, and which affected the object perfectly; and in this way considerable quantities of pus were removed.

The hepatic tumour diminished in size, and became much more tolerant of pressure, and while pressure was made upon it, the flow of matter through the canula was accelerated.

The improvement did not last. On the evening of the 6th the pulse got up again and cold sweats returned. During that night she was delirious, and on the morning of the 7th was evidently dying, and expired at 8-30 A. M. The pus

which passed by the canula was laudable and free from any odour of decomposition till the last.

Before detailing the autopsy it will be advantageous to pass in review the symptoms above detailed and to weigh their significance.

The disease appears to take its origin from the accident experienced in March 1862.

After the autopsy (presently to be given) it occurred to me to ask Mr. Wither whether he had any reason to suspect fracture of a rib at the time of the accident, when he remembered that although he did not detect a fracture, he suspected one or acting upon the possibility of an injury of that nature having been received, he encircled the chest with a broad bandage. However, there were no subsequent symptoms of so grave an injury and no indications of pleurisy having been set up. It is much to be regretted that it did not occur to me to ask this question before the autopsy that it might have been set at rest by examination.

But to resume.—From the time the patient began to complain pain was always referred to the hepatic region, not simply to the hypochondrium, but to the liver itself which was felt to extend beyond its normal limits and to be tender on pressure or palpation. Subsequently hectic emaciation, progressive increase in the volume of the liver, with continued tenderness and the jaundiced expression of features and conjunctivæ, all pointed to the formation and progress of hepatic abscess, while finally the sudden accession of pain during the night of the 27th of May, the absolute dulness on percussion of the whole right chest, the bulging of intercostal spaces, the urgent dyspnœa and displacement of the heart, left no doubt on my mind that the abscess had suddenly perforated the diaphragm and filled the whole right pleural cavity.

At the AUTOPSY, 8½ hours after death, the body was much emaciated, and decomposition was commencing.

On opening the abdomen, (and I should state that I promised the husband of the deceased not to extend the examination beyond the limits necessary to the end in view) the parietes were found to be extremely attenuated, and the intestinal protusion was found to consist of a distended portion of the large intestine pushed forward by the liver,

and protruded through or between the notch or sulcus separating the two lobes. The recti muscles had wasted to a few bands of pale muscular fibres. It was not then an umbilical hernia as surmised during the life. The tactile impression conveyed, and which so completely resembled that of reduction of a hernial protrusion, was caused by the bowel passing between the sides of the notch in the liver. The delusion was perfect and complete; and although it has no bearing upon the termination of the case, I have considered it of sufficient interest to justify this notice of it.

The liver itself was enlarged, its color somewhat pale, its margins sharp; posteriorly it was extensively adherent to the diaphragm by old and dense membrane; its capsule was thickened and its surface uneven, but not distinctly granular. The gall bladder was full of gall stones. There was a small amount of serum in the abdominal cavity (ascites), and the substance of the liver was dense and grated under the knife. It presented in fact to the naked eye the character of incipient cirrhosis. No portion was removed for microscopic examination on account of the promise made to the deceased's husband.

The thoracic cavity being opened in the usual way, the pericardium was found to contain about 8 oz. of clear serum without any admixture of pus or flakes of lymph, and the membrane itself was free from any signs of inflammatory action.

The heart was not examined. The right pleura was full of pus, laudable and free from any odour of decomposition. The lung was pushed upwards and backwards, and existed as a small mass of carnified tissue totally impervious to air, the thoracic walls were lined by a dense false membrane, which also invested the lung, and the cavity was divided into three distinct compartments by transverse bands of false membrane. The membrane lining the diaphragm and lower part of thoracic cavity was dense and tough and fully three quarter of an inch thick, evidently very old; that lining the upper part of the cavity more recent with some quite recent fibrinous effusion. Emptying the lower cavity did not empty the upper; there appeared to be no communication between them.

On attempting to trace an aperture in the diaphragm communicating with a abscess presumed to exist in the

liver, the finger passed into the depression but no abscess was reached.

The liver was now removed with all that portion of the diaphragm to which it was attached by adventitious membrane.

The depression alluded to on the posterior surface of the organ was lined with a fibrous membrane and presented the characters of the cicatrix of a small abscess.

No abscess existed in the liver.

Diagnosis then was wrong, the collection of pus in the right pleura was not due to the bursting of hepatic abscess.

But how was the pleurisy terminating in so large a collection of pus set up? and to what period may its accession or invasion be traced?

We have Mr. Wither's testimony, that none of the ordinarily recognised signs of pleurisy followed the accident received in March 1862. She never complained of cough or any affection of the respiration, or any stitch in the side, but of pain only in the back. Subsequently, it is true, she began to experience pain in the right side distinctly referred to the liver, and attended by enlargement of the organ, that is to say, it extended further beneath the margin of the ribs than it should do in its normal state. This pain was soon followed by loss of health, emaciation, sweats and dysenteric diarrhœa, and the case was handed over to me, as one of chronic hepatitis, and I unhesitatingly accepted it as such, believing that abscess existed. The co-existing jaundiced hue of the features, clearly pointed to hepatic disease. Subsequently you remember there was two days of bilious vomiting, while the case culminated in sudden acute pain in the side, extreme prostration and all the physical signs of sudden effusion into the right pleural cavity.

If to this *resumè* of symptoms I add the absence of cough or dyspnœa from first to last, that is till the invasion of the urgent symptoms on the night of the 27th May, I think it will be admitted that the evidences of hepatitis terminating in abscess evacuating itself into the right pleura were complete. Moreover I can assert that the chest was very frequently carefully explored during the progress of the affection, not cursorily or over the clothing, but systemati-

cally and uncovered, and that up to the 27th of May dullness did not extend beyond the level of the nipple, and which was considered to be the line of the upper border of the enlarged liver.

The autopsy proves that this view was incorrect, the liver did not extend so high, and its encroachment upon the abdomen was due to the pressure exerted upon it above by the collection of pus in the pleura.

The liver in fact was displaced.

The autopsy however proved that there had been two distinct periods of invasion of inflammatory action in the pleura.

The false membrane lining the lower part of the cavity and the diaphragm and constituting the lower septum of membranous division of the pleural space was dense, tough and old, while that lining the upper part of the cavity was more recent.

I am disposed to think, then, that at the period I first took charge of the case in March 1863, there was a limited or circumscribed empyema (the probable origin of which I shall presently discuss) and that subsequently, or on the 27th of May, this collection of pus escaped by ulceration through the investing membrane of the abscess, into the upper part of the pleural sac giving rise to empyema of the whole cavity.

A case which occurred in my own practise some years ago, in which a circumscribed empyema between the diaphragm and lower lobe of right lung from rupture of hepatic abscess existed, suggests this explanation to me.

But how did the primary attack of inflammation originate? Was it idiopathic, that is, did it originate in the pleura unconnected with any injury, or was it due to some injury (possibly a broken rib) at the time of the accident experienced in the fall from her bandy while on the line of march? Or did a small abscess form at the posterior part of the liver (of which the depression before alluded was the cicatrix) and burst into the pleura, and thus light up inflammation and purulent effusions which, under the protective powers of nature, was limited, at first, by a band of false membrane to the lower part of the cavity of the pleura?—or, thirdly,—was the inflammation of the pleura caused by simple extension

from the liver; which, it will be remembered, was intimately incorporated with the diaphragm by old adhesions.

It is perhaps not important to argue now in what way the pleuritic inflammation was originally lit up. The most practical point for consideration is, whether it was possible during life to diagnose a circumscribed empyema situated between the liver and right lung,

Theoretically auscultation and percussion ought to enable us to do so, but practically I believe that in these limited collections of pus occupying the debateable ground of the right side, it is not always possible. Extension of inflammation through the diaphragm from the liver to the pleura may go on so insidiously as not, even if suspected, to be recognised by the physical signs ordinarily marking an attack of pleurisy.

Further we know that pleurisy is often "latent" as it is termed—that is not rendered evident by the ordinary general signs and symptoms. Indeed the escape of the contents of an abscess in the liver into the pleura is often not attended by any marked symptoms.

Frerichs, under the head of "Diagnosis of Hepatic Abscess," writes, "Under certain circumstances it may be difficult to distinguish pneumonia and pleurisy of the right side resulting from the extension of hepatic abscess into the right side of chest, from simple pneumonia and pleurisy especially when the hepatitis is latent from the commencement."

In the case of pleurisy the diagnosis is much more difficult than when the abscess opens into the lung. In that case, according to my experience, the attention is always directed to the lung. There are cough, dyspnœa and expectoration to guide us, but in pleurisy the pain so closely, I may say entirely, resembles that of hepatatis invading the covering of the upper border of the liver, that in the absence of cough and dyspnœa, it is next to impossible, if not actually to determine whether or not the inflammation is hepatic or pleuritic.

As regards the embarrassment of the respiration in pleuritic attacks, we have the authority of the most eminent teachers, that in chronic cases when the effusion has been slow, the lung so accommodates itself to the pressure that no dyspnœa is experienced; and, moreover, cases have been recorded in which, spite of abundant effusion occurring in the space of a

few days, no difficulty of respiration has been experienced and Watson writes, "in others, by some unaccountable idiosyncracy, the respiration remains at all times very facile, both at the outset and during the progress of the disease."

On a review of the case I am disposed to pronounce that a small abscess did at one time exist in the liver—that it opened into the right pleura constituting an empyema added to, doubtless, by secretion from the pleura itself—that this collection of pus was limited by adhesive inflammation—and that the sudden attack on the 27th of May which finally proved fatal, was owing to the escape of the contents of this abscess (for so it may be termed) into the upper part of the pleural space. I formed this opinion upon the evident difference as to age in the false membranes lining the upper and lower parts of the cavity respectively.

A few words in conclusion regarding the operation of paracentesis thoracis.

Of its propriety and necessity there could be no doubt. The intercostal spaces so bulged that fluctuation was evident, while the urgent embarrassment of the respiration and of the heart's action imperatively demanded relief. The trochar was entered at the spot where distinct fluctuation was felt, and the instrument selected was the largest of "Cock's" trochars, but the diameter of which I need scarcely observe is made only 1-10th of an inch.

This small instrument was selected to be used in conjunction with the withdrawal of the fluid by means of an elastic bottle and stop cock, measures which I thought likely to obviate the risk of entrance of air and putrefaction of the contents of the abscess.

The operation proved only of temporary advantage. It relieved the dyspnœa and cardiac distress and much bettered for a time the patient's condition, and it is possible that had it not been for the divisions of the cavity of the pleura into distinct pus-containing compartments by bands of false membranes, that the result might have been different:—as it was only one cavity was reached.

PART II.

REVIEWS AND NOTICES OF BOOKS.

On Rupture, Inguinal, Crural and Umbilical: the Anatomy, Pathology, Diagnosis, Cause and Prevention ; with new methods of effecting a Radical and Permanent Cure; embodying the Jacksonian Prize Essay of the Royal College of Surgeons, London, for 1861. With numerous illustrations. By JOHN WOOD, F. R. C. S. Eng. (Exam). Demonstrator of Anatomy at King's College, London; Assistant Surgeon to King's College Hospital; Surgeon to the Lincoln's Inn Dispensary. London: JOHN W. DAVIES, 54, Princes Street, Leicester Square. 1863, 8vo, pp. 326.

WE congratulate the Author, the Publisher and the Surgical Profession upon the appearance of this book. Mr. Wood's name has been intimately associated, for the last four or five years, with the question of the radical cure of inguinal hernia; he has brought accurate anatomical knowledge, great surgical skill, and much mechanical ingenuity to bear upon the subject; he has undoubtedly achieved a large measure of success; and he is, therefore, entitled to claim a hearing upon the matter. It is true, we have been acquainted with his method of operating since the year 1860, when he published the details in the Transactions of the Medico-Chirurgical Society, and in 1861 he wrote an essay on "The best method of effecting a radical cure of Inguinal Hernia," which obtained the Jacksonian Prize. But still we were anxious to hear more of Mr. Wood, and to know the results of his enlarged experience, not only as to modifications in his mode of operating, but also as to the permanency of the cure; and, therefore, this monograph receives a hearty welcome from us.

In the fifth volume of this journal, the subject of the radical cure of reducible hernia was considered; and the writer, whilst acknowledging that Mr. Wood's operation was specially designed to secure occlusion of the sac, and adhesion between the anterior and posterior walls of the inguinal

canal, insisted upon the necessity of patients being examined at a sufficiently remote period after operation, to enable a judgment to be arrived at as to the permanency of the so-called cure. He quotes Mr. Scriven's opinion that the final result of such an operation would require the experience of a year or more after leaving off the truss, and adds that he considers that four years would not be any too long a period to fix upon. The same thing has occurred to Mr. Wood, for he tells us in his preface that he has deferred giving to the profession "the results of some years careful study and experience of the various forms of rupture," until now, chiefly because he has "fully felt the importance of a sufficient lapse of time, or duration, as a test of the reality of the cure," and partly to enable him "to make such modifications of his original method as might simplify and render more effective the steps of the operation." And he adds that he has exhibited, in the Theatre of King's College Hospital, "the condition of many of the patients, at periods of time after the operation varying from six months to five years."

Mr. Wood's work commences with an introduction in which he discusses the propriety of making any attempts for the radical cure of hernia. He considers that the importance which modern writers on this subject attach to the supposed dangers of meddling with the peritoneum and its offsets, is the theory around which most of the objections made to operative interference are grouped. He thinks this theory deduced from experience of operations performed upon the membrane in a state of disease or inflammation, or exposing it extensively to external influences. This prejudice formerly prevailed against early operations in cases of strangulated hernia, but it seems to have generally given way in the latter cases. Mr. Wood says—

"In a general way, inflammation of a parietal portion of the peritoneum has been confounded with that of the visceral layer, or general inflammation of the cavity near the important nervous centres. A secluded portion has been invested with the attributes of the whole; a logical error not uncommon. A closer examination of the fatal cases of attempted radical cure will show that that they have mostly succumbed, not to primary peritonitis, but to the results of burrowing of matter, pyæmia, or wounded bowel. The danger of peritonitis cannot, therefore, be considered sufficient to deter the Surgeon from endeavouring to perfect our means of curing rupture."

He then shows that inguinal rupture is a very common

disease especially amongst the labouring, military, and naval classes; that the disease renders its subjects almost totally incapable of the effective performance of their duty; that trusses are troublesome, expensive, and very often ineffectual; and that any hernia may become strangulated and the patient may die from it.

"Again, rupture is a very troublesome and incapacitating disease, rendering the patient's life uncomfortable, comparatively useless for bodily exertion, and not unfrequently miserable, exposing himself, and often a family, if in the lower ranks of life, to the perils of destitution. It is from this point of view that we may most justly consider the value of an operation for a radical cure to the patient himself, as regards its chances of success or failure in effecting its object. It is readily conceded that it is most difficult to obtain reliable statements of the ultimate results of these operations. Some which have been ushered into notice with most favorable accounts of success, have been found to be attended with almost universal failure in other hands. Upon this point, therefore, it is incumbent upon the Surgeon to speak from personal experience only, founded, as far as may be, upon cases openly treated in a public institution.

"In the Appendix to the present work are inserted such cases only as have been operated on by the author himself, nearly all having had the guarant e of public observation. The total result is, that out of the sixty cases there given, treated by various modifications of the same principle, there have been eleven failures, two doubtful, four partially successful, and one death from pyæmia.

"If these results are compared with the statistics of operations which are now considered by most Surgeons as good and safe operations, they will not be found to contrast unfavourably."

Mr. Wood more fully discusses the risk of these operations, and then answers the question:—In what kind of hernia, and in what class of persons, is an operation most desirable?

To inguinal herina and its varietes is due the chief consideration with a view to a radical cure.

After sixty years of age the operation is unadvisable. Such protection as a good truss can afford is sufficient for old people; their pursuits and capacity for exertion are such as to render them unlikely to be placed in danger by the presence of a hernia, and their declining vital powers render any operation proportionately hazardous. It is in the young and able bodied, exposed to great exertion, and in congenital hernia, and the hernia of children, that the radical cure is a boon not lightly to be discarded.

The first part of Mr. Wood's work treats of Inguinal Hernia, and comprises thirteen chapters.

The first chapter contains a carefully written description of the *Anatomy of the parts concerned in Inguinal Hernia.* The subject is illustrated by some well-drawn figures, less plan-like than, and great improvements upon, those generally found in works on Anatomy.

The second chapter treats of the *Causes and Pathology.* Mr. Wood discards the theory that an abnormally elongated mesentery is the immediate cause of hernial protrusion, and accepts that, which we believe is universally acknowledged at the present day, viz., that the vice is essentially in the containing walls. The author draws special attention to the fact that the "*shape* and *outline* of the hernial sac and canal present many varietes, the recognition of which is of considerable importance, since the Surgeon may often take advantage of their aid in effecting a radical cure." He gives outline diagrams of the chief varietes he has met with. The irregularities, as a rule, are in the canal, affecting the sac near its neck. There are eight figures showing varietes in oblique hernia, three in direct, and two in which the sac was double. In one of the latter, one protrusion was at the internal ring, the other through the conjoined tendon. In the other, both protrusions were at the internal ring. Mr. Wood adds,

"In operating for the radical cure of hernia, a ready surgeon, following the principles recommended in the following pages, will take advantage of and employ most of the irregularities just described in applying his instruments. The same peculiarities, however, will be found to present difficulties almost insuperable, in the treatment by invagination with a plug. So much has this been experienced, that various contrivances for increasing the internal dilating power of the instrument have been had recourse to, with the usual result of failure: being based upon the false principle of dilatation of the openings in order to effect their closure."

The third chapter is devoted to *Diagnosis.* It has the merit of being particularly clear and precise, though, of course, it is not possible for any thing new to be said on such a subject. It is noticed that it is common to mistake for a hernial impulse, the impulse which, upon coughing, is communicated to a tumour on the surface of the groin, by the posterior wall of the inguinal canal. And special stress is laid upon the fact that the true hernial impulse is a *dilating* one, and not a simple forward movement.

The fourth chapter gives a *History of the treatment of Inguinal Rupture with the intention of producing a radical cure.* This chapter is very fairly written with a view to show the causes of the want of success, which has been almost universal. The older practices may be at once dismissed as ineffectual, but some more modern procedures, claiming hundreds of cures, require a passing notice. Mr. Wood speaks of two classes of operations,—first, those dealing with the interior of the sac only, with the view of causing adhesion of its opposed surfaces to each other; and second, those which follow the method of invagination of the skin and fascia of the scrotum, to plug up the hernial canal. Upon the latter principle are founded Signoroni's and Gerdy's, and Wurtzer's operations. And our Author remarks:—

"In all the foregoing methods of producing a radical cure of hernia, it is intended to puncture the sac, or otherwise to cause it to become obliterated by inflammatory effusion. It may be assumed, therefore, that the danger of an extension of the inflammation to the peritoneum itself is nearly equal in all. In this respect, however, we must except the objectionable practice of injecting the sac with irritant fluids, where the unusual danger of an escape of some portion into the peritoneal cavity is obvious, and has in many cases proved fatal.

"With this exception, the records of the numerous cases which have been operated on up to the present time, both in this country and abroad, clearly prove—that the danger of serious peritonitis is by no means great, nor such as to cause any apprehensions on the part of the surgeon or his patient.

"Such fatality as has been placed on record, following all the operations just reviewed, has been, in most instances, owing to the burrowing of matter between the layers of the peritoneum and deep seated fascia.

"When small punctures only are made in the integuments, and a seton or ligature traverses through them the deep-seated tissues; and more especially, when distending force is at the same time used; free suppurative action is set up in the deeper structures; and the pus, not being able freely to escape through the obstructed punctures makes its way along the areolar intervals between the abdominal layers; or along the spermatic cord into the pelvis; or through the inner opening of the hernial sac into the peritoneum.

* * * *

"Unlike the older and more severe operations previously mentioned, the failings of these more gentle proceedings do not seem to be in their danger or fatality, but in their inefficiency to accomplish a good and permanent cure in a sufficient proportion of the cases operated

on, as to give the patient good grounds for expecting a successful issue.

"Most, if not all, of Gerdy's thirty-six cases of operation had a relapse of the hernia; and the operation subsided from public observation until resuscitated recently in various forms and disguises. Of the ultimate condition of cases operated upon by Wurtzer's method, it is very difficult to arrive at sufficient satisfactory information. In all the cases seen by the author, or occurring in the practice of nearly all the Surgeons known to him, these results have been entirely unsatisfactory. With very few exceptions, the rupture re-descended soon after the plug was withdrawn; as soon as the constant use of a truss was discontinued."

The Author proceeds to show why these methods of operating must necessarily be, in a large proportion of the cases treated, unsuccessful.

The fifth chapter treats of *The principles of the operations practised by the author.*

"In all, the main principle of securing the conjoined tendon with the posterior and superior boundaries of the canal, on the one hand; and the anterior and inferior walls up to Poupart's ligament on the other; is adhered to."

The sixth chapter contains a description of *The operation by ligature-thread and compress.* This must be familiar to those of our readers who have paid any attention to the subject. It was described in the *Transactions of the Medico-Chirurgical Society for* 1860, Vol. xliii. But the description here given has the advantage of numerous beautiful illustrative woodcuts.

The operation by wire, as at present usually practised by the author, is the subject of the seventh chapter; and the eighth contains an account of some *Variations of the wire operation.*

The ninth chapter describes the *Operation for congenital hernia in children by the use of rectangular pins.* It is no part of our purpose to reproduce these descriptions in our pages. We must refer our readers to the book itself, in which they will find that not even the minutest detail necessary to the completion of the operation has been omitted. We content ourselves with saying that the operations are very skilfully devised, and that if performed in the manner recommended by Mr. Wood, there must be every chance of the desired object being effected.

The tenth chapter is devoted to the consideration of *The modus operandi of the foregoing operations.* This is treated of under five heads. *First:*—The drawing downwards, forwards and outwards of the posterior and superior boundaries of the dilated tendinous canal, and their permanent union, by adhesion, to the anterior and inferior walls. *Secondly:*—The consolidation and contraction of the tendinous structures traversed by the ligature or pins, under the healing process which succeeds the with drawal of the latter, render them more adherent to each other, and more resistant to pressure from within. The mobility of the different abdominal layers upon each other, which is a cause of the more easy formation of a rupture, is limited and restrained by these adhesions. *Thirdly:*—The sac is entirely obliterated and becomes adherent to the spermatic cord by means of the adhesive action set up by the transit of the ligature or pin across it, and along its interior surfaces. *Fourthly:*—The adhesion of the opposing raw surfaces of the scrotal fascia, invaginated into the hernia canal, to each other,—united with the general consolidation in the track of the ligature, and to the surface of the spermatic cord,—forms an additional provision against a return of the rupture. *Fifthly:*—The union of the pillars of the superficial ring to each other, either directly, as after the use of the pins, or through the medium of the invaginated fascia, as in the other operations, has also a powerful influence in supporting the adhesions formed higher in the canal.

The Causes of failure and danger in the operation are considered in the next chapter. We would recommend a very careful perusal of this chapter by any one about to undertake the performance of Mr. Wood's operation. It is within our knowledge that some operators who thought that they had implicitly followed Mr. Wood's instructions, have been disappointed in finding that they have failed to effect the prevention of the recurrence of protrusion. Had they had the advantage of previously perusing this chapter, it is possible that they might have congratulated themselves upon success instead of owning to failure. Mr. Wood advocates operation in congenital cases at a tender age, as soon as the little finger can be passed into the hernial canal. But he gives a caution.

"In these cases, also, a careful examination of the abdomen is a necessary preliminary. Any tubercular disease, especially of the mesenteric form, strongly contra-indicates interference."

The twelfth chapter contains a *Summary of the cases.* Mr. Wood's honesty of purpose is well exhibited in this summary. He acknowledges some failures, several doubtful cases, and one death from pyæmia three weeks after operation. He eliminates the doubtful cases and those so recently operated on that no deductions can safely be drawn from them, and concludes thus:—

"The total result, then, of the cases given in the *Appendix* yields, without reckoning the doubtful and imperfect cases, and with a fair allowance for future casualties and imperfect records, the encouraging proportion of 65 to 70 *per cent. of successful cases.* And this, it must be borne in mind, is drawn from cases that have been taken entirely *without selection,* and as presented, good and bad, direct and oblique, many of them of a very aggravated kind, some of enormous size, and treated by operative measures, some of which were more or less tentative."

The thirteenth chapter treats of *The use of Trusses in Inguinal Hernia.* This is a subject of very great importance. Our Author says:—

"It has been a matter of common observation, both to myself and other Surgeons, that by the continued wearing of the trusses in ordinary use, although the rupture may be entirely retained, yet the aperture becomes gradually larger, and the protrusion, when suffered to appear, is also constantly increasing in size."

He has therefore devised trusses for the different forms of rupture, both before and after operation, more in accordance with the necessities of the hernial condition and the mechanical relations of the weakened structures. That for oblique inguinal hernia is flat and of a horse-shoe shape, so as to compress and steady the pillars of the external ring, and resist outward and lateral dilatation of the canal. There is no dilating pressure in the axis of the canal and no invagination of the soft parts as in the use of the ordinary convex truss-pads. For ordinary cases a piece of box-wood makes as good a pad as can be required, but in cases where the pelvis is oblique and the hernia difficult to control, the pad may be hollow and fitted with a lever spring. For direct hernia a somewhat different shape and adjustment of the pad is required. The pad is still flat but ovoid with a central perforation. Like that for oblique hernia the pad may be a simple ovoid ring of box-wood, or for particular cases a lever spring may be fitted to a properly shaped plate of german silver and the whole covered with

wash-leather. In some cases these simple pads may not be quite sufficient in keeping the sides of the canal in close apposition, and then a double spring and pad truss may be used. Designs of these trusses are furnished, and the author mentions that they are made by Mr. Matthews of Portugal Street.

The second part of Mr. Wood's treatise is devoted to the consideration of *Crural Hernia.* Operative interference for the radical cure of this form of rupture is much less frequently demanded than in the case of the inguinal variety, in consequence of the much less frequency of its occurrence, and the habits of the persons (females) usually affected by it.

The same division of the subject is observed as in the first part. Thus we have the *Anatomy, Causes and Pathology, Diagnosis, Operation for the Radical Cure, Prospects of a radical cure by Truss pressure.* Mr. Wood's operation is very ingeniously conceived. Its performance necessarily requires a perfect anatomical knowledge and manupulative steadiness upon the part of the operator. His truss is well devised, and we heartily commend the whole of this section on Crural Hernia to the consideration of our readers.

The nineteenth chapter is entitled *Prevention of Inguinal and Crural Hernia,* and affords some useful hints as to the best means of giving support to those who have naturally a tendency to hernia. This is followed by a chapter of three pages only on the *Treatment of Irreducible Hernia.*

The third part treats of *Umbilical Hernia.* First—Its *Causes and Pathology;* then, its *Diagnosis;* third, its *Treatment.* In the twenty-fourth chapter, an *Operation for the radical cure of Umbilical Hernia* is described. Mr. Wood has operated in three obstinate cases in children; but we are not informed of the results, except that in the first case, "while under observation, no return of the rupture had occurred." We think that the perfected operation here detailed by Mr. Wood bears greater promise than even that for inguinal hernia.

The *Treatment by pressure* is next considered. It is observed that the apparatus ordinarily employed in the treatment of this affection in infants is erroneously devised. The apparatus invaginates the skin and hernial coverings through the abnormal opening; and, if it retains its position at all, dilates the aperture. "That a closure of the aperture often follows such an application only proves that

a circular support and a certain degree of pressure only is necessary, in most cases, to prevent protrusion until the progress of development has accomplished a complete occlusion." Applying the principles laid down with reference to trusses for inguinal hernia, our Author employs an umbilical compress in which the pressure bears upon the tendinous margins of the abnormal opening so as to tend to close them towards the centre or median line. Again we recommend our readers to carefully peruse Mr. Wood's remarks before treating the next case of umbilical hernia which may come before them.

An Appendix of 64 pages giving the details of 60 cases operated on, for inguinal hernia, by the Author, completes the work.

We think that the results of Mr. Wood's practice warrant him in speaking confidently as to the success of his operation. There is but one thing we would ask for, and that is *a little more time.* If a percentage of sixty-five cures should be maintained, then, no one, however prejudiced, will be able to refuse Wood's operation for the Radical cure of Reducible Inguinal Hernia, a place amongst the acknowledged successful and scientific surgical procedures.

The work is exceedingly well "got up," and the illustrations are original (in itself a merit, now-a-days), and well drawn and equally well engraved. It is published at a remarkably moderate price, and we certainly cannot consider any Surgeon's professional library complete until this book forms an integer of it. Setting aside all consideration of the important and principal object of the book, the remarks upon trusses alone demand the careful study of the modern Surgeon.

Jaundice: its Pathology and Treatment. With the application of Physiological Chemistry to the Detection and Treatment of Diseases of the Liver and Pancreas. By GEORGE HARLEY, M.D., Professor of Medical Jurisprudence in University College, London; Assistant Physician to University College Hospital; &c., &c. London: WALTON and MABERLY, 1863. Demy 8vo. pp. 136. Price 7*s.* 6*d.*

DR. HARLEY is known as an industrious member of, what he terms, "the new school which is rising up, and carrying

chemistry into the domains of medicine." In the department of Physiological Chemistry, we are indebted to Dr. Harley for a series of very careful observations, the general results of which were made known in the "Contributions to our knowledge of digestion," which appeared in the *British and Foreign Quarterly Review*, for 1860. And it is, probably, to the continuation of these observations that we owe the appearance of this little monograph on Jaundice.

In his preface the author plainly shows us to what scientific school he belongs. He says:—

"Too long have we reversed the natural order of things, and commenced the study of medicine where we ought rather to have left it off. Too long have we striven, by studying pathology ere we were sufficiently acquainted with physiology, to place the pyramid on its apex instead of on its base; and thus it is we remained so long ignorant of the fundamental doctrine, that the same laws which regulate health, regulate disease. Nature does nothing on a small scale, and the more we study her the more we admire the uniformity, and extensive applicability of her laws. * * * Indeed, the further science advances, the more apparent does it become, that not only the animal, and vegetable, but even the organic, and inorganic, form but one world, regulated by the same laws.

"A knowledge of organization, important though it be, is yet less indispensable to the physician than a knowledge of healthy function, for it is the latter which elucidates the dark problems of life, it is the latter which proves the golden key to the comprehension of disease.

"Although not even the most ardent admirers of medicine can say, that it as yet merits the name of an exact science, this ought neither to destroy our hopes nor trammel our labours. With the stethoscope, microscope, and other physical means of diagnosis a new era dawned upon our art; and now the members of the new school which is rising up, and carrying chemistry into the domains of medicine, are the pioneers of the revolution which is soon to follow. If we look back to what the exact sciences of to-day were in former times, we shall find that they were much less perfect then, than medicine is now. Astronomy and chemistry were but astrology and alchemy. If, then, we draw a picture of the future from the progress of the past, we need have no hesitation in saying that chemistry rightly applied, and physiology justly interpreted will, ere many generations pass away, reveal the deepest secrets of diseased action, and although unable to banish death, will yet enable the practitioner to follow with unerring certainty the various morbid changes occurring in the frame."

The above extract will somewhat forewarn our readers as

to the character of the views propounded by our author. He tells us that :—

"One of the chief objects of the author having been to point out how valuable an adjunct modern physiological, and chemical knowledge is in the diagnosis and treatment of hepatic and pancreatic disease, he has neither dwelt on the literature nor discussed the old theories of the mechanism of jaundice, but limited himself almost entirely to a brief exposition of his own views."

Dr. Harley commences by acknowledging that jaundice is not a disease *per se*, but merely a manifestation of morbid action, and one requiring neither skill nor experience to detect. But nevertheless the comprehension of its true mechanism is of much practical importance ; the simplicity of its diagnosis is only equalled by the obscurity of its pathology, and the uncertainty of its treatment. He glances at the immense variety of morbid states, and known pathological conditions with which it is associated, and gives a table of the diseases in which jaundice is met with :— firstly, of the liver ; secondly, of the bile-ducts ; thirdly, of other organs exerting an influence on the biliary secretion ; fourthly, a variety of zymotic diseases ; and fifthly, the result of the injurious effects of certain poisons, as snake bites, alcohol, chloroform, &c.

Our author rejects the views recently promulgated, as to the mechanism of Jaundice, by Frerichs, in his elaborate "Clinical Treatise on Diseases of the Liver," published by the New Sydenham Society,—a work which is most probably in the hands of a great number of our readers. And although he is not prepared to admit the justice of the views of Dr. Budd as to the origin or function of bile, upon which that able physician formed his theory of jaundice, yet he believes that, by the light of modern medical science, he, in his pages, proves the correctness of the conclusions themselves. These conclusions being, "that the disease may arise in two ways— firstly, by a mechanical obstruction to the passage of bile into the intestines, and the consequent re-absorption of the detained fluid into the blood ; and secondly, by a suppression of the biliary secretion arising from some morbid condition of the liver itself, whereby the biliary ingredients accumulate in the circulation."

Our author next gives an account of the constituents of bile, and then enters upon the consideration of the manner of its secretion. He maintains, that the liver manufactures

certain biliary constituents, whilst it merely excretes others. Thus, the biliary acids (glycocholic and taurocholic) are never found either in the blood tissues, or fluids of the healthy organism, with the single exception of those of the liver and gall-bladder. Whilst cholesterine and biliverdine are not peculiar to the liver or its secretion, but are the products of several organs and are always to be detected in the blood. The liver, therefore, is both a formative and excretive organ to the former substances, and an excretive organ only to the latter. The secretion of bile is continuous and not intermittent ; it has its maximum of activity during active digestion and its minimum during sleep. Bile is essential to life, although animals well supported with food, may live for months after the establishment of a biliary fistula. The chief use of bile is to emulsion and saponify fatty acids; it possesses this property in common with the pancreatic juice, but the latter also emulsions and saponifies neutral fats.

Our author next proceeds to discuss *Jaundice from suppression,* which he does under three heads ; arising from (1) Enervation; (2) Disordered hepatic circulation ; (3) Absence of secreting substance. We must mention that according to Dr. Harley the yellow color of the skin and the saffron tint of the urine are simply due to the deranged secretion of biliverdine, quite independent of the presence or absence of the other constituents of the bile. And in jaundice from suppression those substances which the liver merely excretes from the blood will accumulate in that fluid ; whilst in jaundice from obstruction there is a re-absorption into the blood not only of those substances normally existing there and *excreted* from it, but also of those actually *manufactured* by the liver itself. Such is our author's theory. We are not about to follow him throughout his arguments, but there is one point in the section on *jaundice, the result of active hepatic congestion,* to which we must refer. Dr. Harley says :—

" Undoubtedly it must have occurred to many of my readers, that jaundice is frequently absent in cases of acute inflammation of the liver, even running on to suppuration, and that the foregoing theory of the pathology of such cases is therefore insufficient. At one time I was puzzled to explain this apparent anomaly, but on subsequent investigation the true cause became apparent, and instead of the above fact detracting from, it tended rather to strengthen the theory. If, for example, we closely examine cases of acute hepatitis without jaundice, we find that they are those in which only a portion of the

liver is affected. It matters not whether it be one lobe or two, the surface or the centre of the organ, the disease is invariably circumscribed ; and there is enough hepatic tissue left in a sufficiently normal condition to prevent the constituents of the bile accumulating in the blood and producing jaundice. This may even occur, as I have myself observed, when the disease has run on to suppuration."

Our readers will acknowledge that this is a very ingenious explanation ; and, whether it be correct or not, they must own that, experience has already made them acquainted with the clinical fact, that diffuse inflammation of the liver is a rare affection, and that in a very large proportion of cases of active congestion and inflammation of the liver, it is but a portion of the organ which is affected.

In *Jaundice from obstruction* we may have three conditions. Firstly,—a congenital deficiency of the bile-ducts :—rare. Secondly,—an accidental obstruction in the course of the ducts, as from gall-stones, hydatids, or. the entrance of foreign bodies from the intestines. Thirdly,—closure of the outlet of the common duct, as, for example, from the pressure of the pregnant uterus, or distended transverse colon, or from organic disease of the pancreas, or neighbouring organs.

With regard to the second condition, it is mentioned that we may have gall stones, and even all the most painful symptoms of them, without the slightest trace of jaundice. In fact the latter only appears as a complication of gall-stones when they chance to block up the common duct. Such jaundice is more frequently transient than permanent, but if it does become permanent it sooner or later leads to a fatal termination.

Dr. Harley makes an important observation, viz., that "in *permanent occlusion* of the common gall-duct the liver may be found *hypertrophied* in the *first*, of *normal dimensions* in the *second*, and *atrophied* in the *third* and *last stage* of the disease." And he goes on to remark :—

" In cases of the kind here described, it is not at all unlikely that the enlargement of the liver in the earlier, as well as its atrophy in the later, stages of obstruction, may be mistaken for the cause of the jaundice, instead of the result of the arrest of the flow of bile, and thereby lead to a grave error in treatment. The history of the case, together with a knowledge of the above facts, will, however, tend to facilitate the diagnosis. Thus, it must be ascertained :—

"Firstly,—If the jaundice preceded the alteration in size of the organ.

"Secondly,—If there is an absence of any history of hepatitis; and,

"Thirdly,—If there is no evidence of any pulmonary or cardiac mischief likely to lead to passive congestion of the hepatic tissue."

But cases very frequently occur where the cause of jaundice cannot be ascertained even after the most careful examination. It is in these obscure cases that Dr. Harley would resort to chemical investigation, and interrogate the excretions as to the presence or absence of the biliary acids. Of course, if his views are correct, their presence would indicate that the case was one of obstruction; whilst their absence would be an equally good indication that the jaundice was due to suppression. With regard to the intestinal excretion, the pipe clay colour and offensive odour will indicate the absence of bile. Cautions are given not to mistake the artificial colouring of the stools by articles of food and medicines, as an indication of the presence of bile. Fat in the stools is generally supposed to be indicative of disease of the pancreas, but it *may* be due to disease of the liver. Should the fats be neutral, then the pancreas must be in fault.

The urine in jaundice should be examined for the biliary acids; which Dr. Harley, in opposition to Frerichs, says may be certainly detected. The readiest mode of detection is the following:—

"To a couple of drachms of the suspected urine add a small fragment of loaf sugar, and afterwards pour slowly into the test-tube about a drachm of strong sulphuric acid. This should be done so as not to mix the two liquids. If biliary acids be present, there will be observed at the line of contact of the acid and urine—after standing for a few minutes—a deep purple hue.* This result may be taken as a sure indication that the jaundice is due to obstructed bile-ducts. On the other hand, the absence of this phenomenon, and the occurrence of merely a *brown* instead of a *purple* tint, although, in the earlier stages of jaundice, equally indicative of suppression, is, of course, for the reasons already given, no indication of the cause of the suppression. That must be gleaned from other circumstances."

Further Dr. Harley points out an important difference,

* "The immediate formation of a reddish coloured line is due to the acid setting free urohæmatine, the normal colouring matter of the urine."

also, in the contamination of the blood, in the two forms of jaundice.

"In cases of jaundice from suppression we seldom or never meet with those extreme symptoms of cerebral disturbance which are so common in cases of jaundice from obstruction. I believe the reason of this difference in the two forms of jaundice arises from the circumstance that the really poisonous parts of the bile are the biliary acids, and that they, like urea, are powerful narcotic poisons."

Several very carefully conducted experiments on animals, for the production of artificial jaundice, led our author to the conclusion that the biliary acids, and not the bile pigment, are the really poisonous parts of the bile.

The details of a very interesting case are given in which is shown the value of physiological chemistry as an adjunct to other methods of diagnosis in obscure diseases of the abdominal organs; and our author concludes this pathological section of his work, in the following words:—

"Having now explained the mechanism of the two forms of jaundice—that arising from suppression, and that induced by obstruction—it only remains for me to remind my readers, that there is frequently a combination of the two conditions. Jaundice from obstruction, for example, cannot long exist without becoming complicated with jaundice from suppression. The continued backward pressure exerted on the hepatic parenchyma by the over-distended bile-tubes, sooner or later impedes the circulation in the organ to an extent sufficient to induce an impairment, if not an almost total arrest of the biliary secretion. Hence it is, that in the last stage of jaundice from obstruction the biliary acids gradually diminish, and at last finally disappear from the urine. We have it nevertheless, in our power to distinguish between the two forms of disease—for whereas, in jaundice arising from simple suppression, there is only an absence of the bile acids; in jaundice from obstruction, complicated with suppression, the absence of the bile-acids is usually associated with the presence of tyrosine, and leucine. For before complete suppression occurs as a result of obstruction, the hepatic tissue has already had its nutrition so impaired, as to admit of the formation of these foreign substances. Lastly, the history of the case will of itself be an important guide."

The treatment of Jaundice.—The success of our treatment, if we accept Dr. Harley's views, will depend upon our powers of diagnosis.

"A line of treatment found to be beneficial in one case of jaundice, might prove very hurtful in another. For, as has been shown in the foregoing pages, jaundice from suppression, and jaundice

from obstruction, are, it might be said, two entirely different diseases with only the symptoms of yellow-skin, high-coloured urine, and pipe-clay stools in common."

Of course, the first object is to remove the exciting cause, if possible ; if this be beyond our power we must concentrate our efforts on the mitegation of the effects. Dr. Harley strongly condemns a routine use of cholagogues—they are worse than useless in cases of obstruction. Most disastrous results have followed the injudicious use of mercury. Physiology has shown that mercurial preparations do not stimulate the liver to secrete bile ; but nevertheless Dr. Harley opines that they have an important indirect effect in reinducing the biliary secretion, and thereby curing certain cases of jaundice. Mercury is an antiphlogistic, its prolonged use reduces the red blood corpuscles to a minimum ; and "as in the majority of cases of jaundice from suppression, the stoppage of the biliary secretion is due to active congestion of the liver, mercury proves beneficial in such cases, not by stimulating the biliary secretion, but simply by removing the obstacle to its re-establishment, namely, the hepatic congestion."

There are some useful hints given as to the value and proper mode of using the mineral acids and soluble alkalis ; and special attention is called to Benzoic acid as a useful remedy in jaundice, arising from enervation, or from active congestion after the acute symptoms of the latter have disappeared. Dr. Harley is doubtful regarding the mode in which it acts, but "one point seems clear, namely, that it hastens the reabsorption from the tissues, and elimination from the body, of the bile-pigment. It thus appears to play the part of a whitewash."

Podophyllin proves of service in jaundice from suppression ; it is a purgative and it increases the flow of bile. It is decidedly useful in cases of insufficient secretion from want of nervous power, and is a good stimulant, combined with gentian or quinine, in cases of "torpid liver." There are great objections to its indiscriminate use, for it is the *bane* in jaundice from obstruction.

Sulphuric ether and turpentine formerly were supposed to have the power of dissolving gall stones, but faith in the powers of the mixture became shaken and it has ceased to be employed.

Dr. Bouchut has recently proposed chloroform as a solvent for biliary concretions, but Dr. Harley thinks it has no such power; besides, it becomes speedily decomposed in the blood, and even were this not the case, it could scarcely exist in a sufficiently concentrated form to be able to act as a solvent of biliary calculi.

In jaundice from obstruction, cases are much less under the power of remedial agents than in those arising from suppression. Modes of treatment of special cases are indicated and when permanent occlusion of the common bile-duct has occurred, with great distension of the gall-bladder, Dr. Harley recommends, although it be little better than a forlorn hope, the artificial establishment of a biliary fistula.

Of course mercury and anything, whether food or medicine, which is likely to augment the biliary secretion must be avoided in all cases of obstruction. The strength of the patient must be supported, by light and readily digested food, the bowels kept open by gentle purgatives, and the elimination from the blood of the biliary constituents favoured by the exhibition of mild diuretics. The place of the absent bile may be supplied, but *not by giving inspissated bile along with the food.* The bile should be given at the *end of stomachal digestion.* Dr. Harley describes a process for the manufacture of bile for medicinal purposes, and mentions that Messrs. Savory and Moore have under his directions, put the bile so prepared into capsules which are not readily acted on by the gastric juice. By administration of these capsules in the manner described in the text "the physician is enabled to imitate nature, and supply an important element to the system; which, although incapable of curing the disease, can nevertheless ward off for a time the fatal termination."

We have given the above epitome of Dr. Harley's views, because we consider that they are well deserving of the attention of the profession. We cordially commend his little book to our readers, in the hope that they will put his conclusions to the test. Although we believe our author is treading in the right path, we must own that a larger amount of clinical experience than has been hitherto afforded, is necessary to the full establishment of the truth of his opinions. The instructions given for the detection of the biliary acids in the urine, render such detection a matter of the simplest kind, and should further research verify the statement that

in jaundice from obstruction these acids are present in the excretion, and that they are invariably absent from it in suppression, we shall scarcely be able to come to any other conclusions than those in the text. And it will at once be apparent to our readers that if these views are correct, the diagnosis of jaundice has been rendered more certain and easy, and, as a consequence, its successful treatment less a matter of speculation than it is at present.

On the Cure of Club-foot without cutting tendons; and on certain new methods of treating other deformities. By RICHARD BARWELL, F. R. C. S.; Assistant Surgeon, Charing Cross Hospital; Author of "*A treatise on diseases of the Joints.*" London: J. CHURCHILL AND SONS, 1863, 8vo. pp. 224.

THE name of the author of this little work must be familiar to most of our readers, and the subject matter of it has been already introduced to their notice by a former contribution, by the author, read before the London Medico-Chirurgical Society, "On certain grave evils resulting from tenotomy."

The prefatory remarks of Mr. Barwell sufficiently explain his motive in investigating the propriety of tenotomy, and his experience must be more or less confirmed by every one who has seen it had recourse to in any large number of cases. The *immediate* effects of it are certainly marvellous —but the too frequent return of deformity, the occasional converse distortion, and the frequent impairment, or loss, of power of the limb, are all powerful arguments against its adoption if it can possibly be avoided. The author's examination of the structures of the foot and ankle soon convinced him that "free and unencumbered re-union" of tendons was almost impossible; and that the lameness which resulted from tenotomy was more or less inevitable.

The conviction, which further study impressed upon the author's mind, was—that *talipes* affects the front half of the limb, and that the after treatment in case of operations, and the mechanical treatment of it, by shoes "which act primarily and chiefly on the ankle joint," must be ill-adapted to effect a cure.

To avoid, therefore, the patent objections to operative interference, and to mechanical appliances designed upon an erroneous principle, it became necessary to design some means whereby force could be applied to the anterior half of the tarsus ; and whereby abnormal movement could be guided into its " normal direction and relationship." The development of this latter intention is the essentially novel portion of this volume. In setting it before us, Mr. Barwell is careful that we should start from the only true basis of mechanical Surgery, viz., a knowledge of the normal anatomy of the parts implicated in the progress of disease, and he next pursues a systematic enquiry into the abnormal position of parts in each deformity and the present mode of treatment of each variety ; concluding with suggestions for a more rational and successful mode of procedure.

Chapter I. gives a good account of the structure of the foot and its cardinal movements : and it directs especial attention to the value of the *medio-tarsal joint* bounded behind by the *astragalus* and *os-calcis,* and, in front, by the scaphoid and cuboid. This joint is here considered as the chief agent in promoting the flexibility and security of the foot in its natural state :—it may, indeed, be said to compensate for the imperfect lateral motion allowed in the ankle, and which is by this joint " delegated to the front half of the foot." The author considers that to the support of the tendon of the *tibialis anticus* is chiefly, if not entirely, due the maintenance of the longitudinal arch of the foot. Similarly he demonstrates that to pure muscular influence are the various positions of the foot referable: and that, with the exception of the *tendo Achilles,* all the tendons passing from the leg to the foot are inserted in front of mediotarsal articulation. These considerations form the ground work of Mr. Barwell's remarks as to his cure of *Club-foot.*

Chap. II. investigates the varieties of deformity observed and the causes of them, and he aptly remarks on the fact that the several recognized varieties of Club-foot are simply exaggerations of normal positions, and that they are due,—not to spasm of one set of muscles, so much as to paralysis of those acting in an opposite direction. On this point he says, pp. 17—19.

" Both congenital and noncongenital talipes are said to be produced by spasm or other abnormal contraction, and also by paralysis of certain muscles,

Let us shortly examine the former doctrine. "A muscle will adapt itself to any degree of length or of shortness, provided that degree be constantly preserved; thus, if we tie up an elbow or a knee in the bent position, and keep it so fixed for a month or six weeks, we shall find that the flexor muscles, which were kept short by that posture, cannot for a considerable time regain their former length; while the extensors, which have been kept long, cannot recover the power of contracting to their former shortness. Thus, when in the latter part of the last century people left off wearing high-heeled shoes, the additional length of gastrocnemius, required to enable them to get the heel to the ground, could not be gained without considerable stretching and pain in the calf; several cases are on record in which a painful ulcer on one part of the foot has caused the sufferer to keep that part from the ground until it became impossible to put it down. Also, it is well known that children acquire, from imitation or other cause, some awkward trick or posture which, if not corrected in time, will become so fixed, as fully to merit the name of deformity. Yet all such sources of muscular shortening are, as a rule, neither violent nor persistent enough to produce a permanent malposture, and thus are only among the very exceptional causes of deformity."

In fact, just as laryngisimus stridulus is by some authorities referred to spasm and by others to paralysis, so this Author regards the pedal malpositions under reference to be due to the latter and not the former cause, and he draws the natural, and we believe correct conclusion, that in restoring the lost muscular power is our best hope of successful and permanent cure.

In Chapter III. we find the evils of Tenotomy set forth in startling array, p. 27.

"A goodly number of club-footed patients come under notice with the paralysis still continuing, a good many with the muscles still excessively languid. The patient is in one of the following conditions; he either has too few muscles, or some of his muscles are too weak to act; and the so-called orthopædic practice of the present day is, unfortunately, to cut the tendons, and destroy the power of those organs which are still healthy. It is quite certain that if all the active tendons be divided, so that there be nothing to resist any external force, the foot can be squeezed into something like shape; but to the annihilation of its power. That the above is not a misrepresentation of tenotomist treatment, may be seen by the following—'Upon attempting to adduct the feet, the peronei and common extensor were rendered extremely tense; upon attempting to flex the foot, the tendo Achilles was also tense; and upon an attempt to depress them, the anterior tibial and extensor proprius pollicis were also tense, there being the smallest possi-

ble amount of motion in the ankle joint, and that of an unyielding character. I therefore proposed the division of the whole of these muscles.' Again, another writer says, 'peronei-tendons are to be divided, or, together with them, those of the extensor longus digitorum and the tendo Achilles ; and also those of the tibialis anticus and extensor proprius pollicis ;' after which the author adds, 'there is considerable difficulty in continuing sufficient support to the arch of the foot, and even after the arch has been restored, support has to be continued for many months,' and really it would be wonderful if such were not the case. We find also that varus is treated upon a similar plan, namely, that of dividing every tendon whose muscle still appears active enough to resist any force applied from without."

The alleged objections to the practice to tenotomy would, however, only throw difficulty in the way of the Surgeon, had not the author been able to supply a new mode of cure and one not open to similar objections. This he does in the 5th Chapter of his work, which may be said to give the general theory of his treatment. Before briefly quoting his general outline of the rationale of treatment, we may briefly notice that Mr. Barwell regards the present more generally adopted system of mechanical and after-treatment, as essentially wrong in principle and injurious in practice, and he again dwells on the incorrectness of all attempts to mould the foot into shape by acting chiefly, if not entirely, on the ankle joint. His observations are remarkably clear and well-arranged, and he certainly, to our mind, proves that his objections to the present mode of treatment have not been lightly preferred, and that they are genuine and argumentative. This is not a work intended simply to set forth views peculiar to the writer, but it is a carefully argued essay on a class of affections which have been treated for years upon a sort of routine principle which is proved, on investigation, to be essentially wrong. Perhaps, in "his zeal for true principles," Mr. Barwell has been occasionally somewhat severe in his remarks and in his criticism, but in appealing to practical results, a certain amount of severity is occasionally necessary, and errors must be pointed out without reserve.

Chapter v. is objectionable only in one respect, viz., the heading "*My new method of Treatment.*" This savours a little too much of the self-laudatory, and perhaps it might have been otherwise designated. We have no doubt that an author, who, on careful investigation, ascertains a new mode of treatment, is fully justified in asserting its originality and defending its correctness without liability to censure, but it is better if his claims to the honor of discovery

are rather admitted by others than asserted by himself. In making these observations, we by no means desire to deny to Mr. Barwell all possible credit for the scientific tone and practical value of this very excellent work. It is only to be regretted that even this slight blemish should mar its general and remarkable merit.

Mr. Barwell's views as to the correct principles of treatment, are as follows :—

"I have devised and carried on to success a plan of treatment diametrically opposed to that by tenotomy, and utterly different to that by shoes. It is conceived and founded on the following principles :

1st.—That as the loss of balance in muscular action, which produces the deformity, is nearly always caused by paralysis of a certain set of muscles, we are to restore that balance.

2nd.—This restoration is to be accomplished by substituting a force for the weakened or paralysed muscles, and not by depriving the still useful ones of their power.

3rd.—That the succedaneum must be applied as nearly as possible in the direction and position of the paralysed organ or organs ; and must act on the parts, and on those only, on which the muscular force is normally expended.

4th.—Thus the foot is not to be treated as a whole, but as a compound of many bones, each of which being subject to muscular action, plays a definite part in deformities.

5th.—That since motion is essential to prevent or overcome fatty degeneration, as well as to allow the weakened muscles to recover their power, the foot is not to be fastened to any rigid clog ; but, on the contrary, each part is to be allowed movement, which is gradually to be guided by the imitative force from an abnormal into the normal direction."

The author next goes on to explain the mode of carrying into practice the precepts here laid down : and, we may briefly state that he employs springs of India-rubber to act as a substitute for the absent or diminished muscular power. These springs are stretched between the origin and insertion of the paralysed muscle at a degree of tension sufficient to aid diminished power or to supply its place if it be wholly in abeyance.

The instructions for this artificial imitation of natural power are interesting, but we cannot afford space to insert them in detail, and to epitomise them would be unsatisfactory. Some curious calculations are afforded as to the power of elas-

ticity possessed by India-rubber, but it is not necessary to dwell on this subject, as in this country this part of the treatment should be modified. We feel that it would be beyond our province to do more than hint at the pedal deformities which may be relieved or cured by the steady and continued application of the precepts inculcated by the author, and we therefore summarize briefly the principles of treatment in each case, and the results that have been obtained by him.

Flat Foot, due to relaxation of the Tibialis anticus, may be remedied by artificially aiding that muscle. Of the apparatus necessary to effect this end, the author gives a detailed account, abounding in evidences of much mechanical ingenuity, and apparently eminently successful in its results. These may be summed up as follows. Cure can usually be effected, with persons in fair health, in adults in three months, in children sooner, and in old people less rapidly. Debility, especially if due to too rapid growth of the patient, greatly interferes with the rapidity of cure, and often requires the continued use of the apparatus, even after restoration to the normal shape of the limb has been obtained.

(Chap. vii.) Talipes Valgus, in which abduction and outward rotation of the front on the back of the foot have taken place, may be similarly relieved by strengthening the anterior and posterior tibial muscles which are deficient in power.

Chapter viii. contains a similar account of Talipes Varus, the direct opposite to the last named affection. This form of distortion being due to paralysis of the Peronei muscles, results in abduction and inward rotation of the front on the back of the foot. The necessity of extreme caution both in forming and enunciating any prognosis in these cases and the value of Faradization as a means of restoring muscular power, are appropriately alluded to.

One of the striking peculiarities of Mr. Barwell's mode of treatment, as advocated in this and the preceding Chapter (vii.) is, that total rest is by no means enjoined, and is, indeed, stated to be injurious. Muscles deficient in power themselves will, by the aid of artificial assistance, regain sooner or later their normal condition; while if left entirely unused, they are extremely likely to become atrophied—or to degenerate into fat. In the milder forms of this affection

three months has been found sufficient to effect a cure, but it is not possible to fix any certain time, nor is it indeed essential, for immediate improvement in gait follows the first steps of the treatment, and in its later stages lameness is with difficulty detected.

In the following Chapter (ix.) the nature and treatment of Talipes Equinus are considered, and the common error of attributing this disease to contraction of the sural muscles (and consequently the desirability of dividing the Tendo Achilles) is dwelt upon. Mr. Barwell, on the contrary, demonstrates that we should rather refer this affection to paralysis of the muscles lying in front of the tibia, the result of which is, that the front of the foot becomes bent upon the back of it. Such being the case, division of the tendo Achilles cannot be an efficient cure, partly because contraction is so liable to recur, and partly because the muscles at the back of the leg are not themselves in fault. In this Chapter, two modes of cure are discussed; first, that by mechanical appliances to supplement the muscles which are deficient in power, and, secondly, by sudden extension of the parts while the patient is under the influence of chloroform.

We intentionally pass over the contents of Chapters x—xii, because the rarity of Talipes calcaneus causes the author to lay down merely theoretical treatment of it. The xith Chapter is one of the most interesting in the book, treating of the unsightly deformity of the curved or angular knock-knee. For the remedy of these affections, so commonly observed in scrofulous children, Mr. Barwell has devised a mechanical treatment which would, from his account of it, appear calculated to be exceedingly successful, although from the advanced stages at which these cases are usually brought to the notice of the Surgeon we cannot expect that a very rapid cure can be effected. We are also pleased to observe that in cases xiv.—xvii. a perfectly satisfactory result was obtained after the mechanical mode of treatment which the author advocates.

We cannot fail to remark that Mr. Barwell avoids an error into which we think that specialists too often fall, namely, that of overlooking the constitutional cause of diseases which are locally developed, and that he, on the contrary, duly observes that mechanical treatment should be assisted by suitable regimen, good air, and tonic medicine. By

the judicious employment of these means, together with the application of the principles so clearly laid down by him, we may hope henceforward to treat these affections with results, the success and permanency of which could not have been attained by the older method of procedure.

It is unnecessary for us to recommend Mr. Barwell's work to our readers, for we entertain no doubt that the subject and object of it are equally interesting to them. Many points in it we have necessarily passed over, as, in the absence of the illustrations with which it is freely supplied, it would have been impossible fully to explain the purport of our author's suggestions. One point alone deserves a passing notice, it will be necessary for those who desire to imitate Mr. Barwell's mechanical appliances, to substitute for India-rubber some other elastic, less liable to be influenced by tropical heat. We believe that flattened or circular coils of steel wire may be made to serve the same purpose, but that we may use these efficiently it is highly desirable that we should become acquainted with the modes of adaptation of artificial support to paralysed muscular structures, and nowhere can we find this so well explained as in the volume before us.

Plain and Practical Medical Precepts. By ALFRED FLEISCHMANN, Fellow of the Obstetrical Society, and late Physician Accoucheur Assistant to King's College Hospital, 2nd Edition, corrected and revised.
Large sheet, J. W. DAVIES, London, 1863.

IN no respect has modern education been more signally improved than in the instruction which is now afforded in most schools and families with reference to the elements of sanitation and the general principles of hygiene. Simple instruction as to the application of domestic remedies, and as to what is to be done in the emergencies arising from sickness or accident, is no longer held to be exclusively the Physicians' prerogative. In the hospitals in the East, ladies of gentle blood did not shrink from the task of attending the wounded in battle and those dying of deadly disease, and perhaps we do not exaggerate when we say that the example afforded us ten years ago has worked in many ways towards the introduction of a rudimentary knowledge of medical matters, as one

of the essentials of a complete education both of boys and girls. By all classes there is now, fortunately, a ready recognition afforded of the importance of fresh air, cleanliness, and healthy nutritious food with abundance of light both in sickness and in health, while the inevitable injury arising from neglect of these matters, or from deficient drainage and dirt, is no longer considered as a mere scientific theory, but is recognised as a practical fact.

The institution in several of our public schools of classes where these subjects are systematically taught, has been considered by us as deserving of every commendation, and we are glad to know that *Nurse classes* and similar scholastic institutions constitute a recognised portion of the instruction afforded at that noble Institution in Madras, known as the Military Female Orphan Asylum, where the pupils have gained considerable acquaintance with these subjects. For those, however, who have not had this advantage, we have long desired some short practical and cheap guide to several little matters of domestic importance, more especially to the management of emergencies likely to occur in a household. Such a guide is here presented to us, and we would gladly see a copy of it presented to every woman, gentle or simple, upon whom the cares of a household devolve.

The subjects treated of are well chosen, and include considerations regarding fresh air, free access of light, cleanliness, management of a sick room, the making of poultices and mustard plaisters, the application of blisters, treatment of bed sores, application of leeches, fomentations, how to prepare a vapour bath, or inhalations, the treatment of burns and scalds, hœmorrhage, fractures, foreign bodies in the eye, boils and carbuncles, &c., &c. The last two columns of the sheet are occupied with hints regarding the management of the lying-in-room, and the care of infants both as regards clothing and food.

Without expressing entire agreement in all the recommendations of the author, we must yet commend the tone of almost all his remarks, while the subjects chosen are just those which are likely to be of practical use in every-day life. We would be exceedingly glad to see a sheet of plain instructions drawn up for the assistance and guidance of the many wives and mothers who in this country are so frequently miles from professional assistance, and who have no possible opportunities of reference to books, &c. In this, of course, Indian ap-

pliances should be substituted for European remedies, and perhaps a little information regarding domestic medicines might be given with advantage.

That the utility of Dr. Fleischmann's "Precepts" is appreciated at home, is fully evidenced by the fact that they have already attained the dignity of a second edition. The reason of this will be tolerably apparent to any one who will peruse such instructions as the following, which may be taken as fair samples of the style in which the author addresses those who seek instruction on emergencies of a nature by no means uncommon in large establishments.

"Loss of Blood, may be either external or internal; that is, either from the surface or from the interior of the body. When external, apply suddenly to the parts the coldest water you can get, and continue so doing. If the blood comes out in spurts or jets like water from a pump, if possible, grasp the part below the wound, that is nearest the heart. If it flows out in a running stream like water from a tap, grasp the part below the wound, that is furthest from the heart. The first kind—where the blood spurts out—is likely to be most dangerous. If you can stop it no other way, force your fingers into the wound, and keep them there until the Doctor comes. When the bleeding is internal, its most general sources are the nose, lungs, stomach, and womb. Ice-cold water should be applied as near the flow of blood as possible, and the whole body (and mind, if possible,) should be at rest. When (without any external injury having been received) the blood pours from the nose or womb, or is coughed up from the lungs, or vomited from the stomach, give half an egg-cup full of spirits of turpentine in half-a-gill of milk, or thin arrowroot, and let the patient eagerly smell at a well-turpentined rag and suck ice freely. Keep him *cold, quiet, and in bed,* till the Doctor comes."

This all very much to the point and of practical utility. The following is equally good and possesses the double advantages of clearness and brevity.

"*Convulsions.*—One of the most alarming and frequent symptoms of disease amongst young children is convulsions, in such a case it will be well, until the Doctor can come, to put the little patient in a hot-bath, at the same time putting cold-water cloths to the head. Much pain and restlessness is often caused by wind and acidity, which a few grains of magnesia, in a little peppermint water, will often relieve. These affections will rarely happen if the infant be fed on milk. The Physician who revised these notes tersely, adds 'most crying in infants is caused by wind; sometimes temper, and sometimes pains.'"

Parturition without pain or loss of consciousness. By JAMES TOWNLEY, Member of the Royal College of Physicians of Edinburgh, Fellow of the Royal College of Surgeons of England, Fellow and Councillor of the Medical Society of London, F. L. S., &c., &c. Third Edition, London. J. W. Davies, 1863. 8vo. pp. 63.

NEED we assure our readers of the pleasure with which we again welcome Mr. Townley upon the stage of Medical Literature? This is now his third appearance, a fact however which he would probably correct, as he seems to labour under some rather wild ideas regarding *arithmetic.*

To those who have not read our former notice (vol. v. pp. 397 *et seq.*) of this highly unprofessional production, we may simply say, that it is a self laudatory and extremely egotistical opuscle, which holds up the author as *the* authority upon obstetric anæsthetics, in support of which claims, he brings forward a series of private letters which must either have been written on his direct solicitation, (of which they bear ample evidence) or which, if strictly in professional confidence and from feelings of personal gratitude, should as certainly have never been published.

There is no essential difference between the first edition and the third. They are equally wanting in good taste, they are equally deficient in professional value, but by a little judicious outspreading of the materiel, and by the careful re-printing of the *advertisement* to the first edition, and of the *preface* to the second edition, six additional pages are apparently tacked on.

These two prefaces are interesting; they are written with an amount of modesty and of professional ability that excite our admiration for the gifted, though to us unknown author, whose lucid style, grammatical diction and professional acquirements are amply evidenced by such passages as the following:—

(Preface to the Second Edition.)

"A second edition of my little work being required at the expiration of only a few months is gratifying to me, as evidence that my views regarding the use of an Anodyne in Parturition have attracted considerable attention. I may take this opportunity of stating, that I have never had any intention of undervaluing the merits of

others who have laboured in the field of anæsthetics, my only claim to attention consisting in the novelty of my mode of applying the agent, by which its effects are so remarkably modified.

When chloroform is administered in the usual way it is given slowly, and "goes the round of the circulation" before it relieves the pain or produces anæsthesia. Whereas, in my plan of using the "Anodyne," the rapidly repeated but interrupted impressions made on the nervous system produce the Anodyne without the anæsthetic effect—before indeed the mass of the blood has become affected. In this consists all the originality to which I lay claim. I have used the word "Anodyne," instead of "modified chloroform," in consequence of this peculiarity of its effects. I cannot but regard this as an improvement on the old plan of using Chloroform—which relieved pain it is true, but it produced loss of consciousness also and was not unattended with danger.

(Preface to the Third Edition.)

The daily increasing interest which my plan for relieving the pains of labour has excited, by the production of an anodyne instead of an anæsthetic effect, has absorbed the second edition of my little work. I cannot but be gratified at having to reprint it for a third time."

By what method of calculation Mr. Townley manages to consider a third *edition* to be a third *re-print* we are not precisely aware, and we are equally uninformed as to the grounds upon which he arrogates to himself the title of "Doctor," which is carefully inserted in almost every letter which he publishes. He appears in this respect to imitate a good many professional men in this country who quietly allow others to give them brevet rank of a professional character. Mr. Townley is not a *Doctor*, as he very well knows, for the College of Physicians of London have distinctly announced that their graduates have no right to the title, and he cannot possibly be ignorant of this fact, which has excited a very animated discussion in the home Medical Journals.

Under such circumstances we think he would have done well had he erased this objectionable title, which he knew must have been given either in ignorance of facts, or intentionally to deceive. We would suggest that, when he re-prints for the *fourth* time according to him, that is, if he should inflict a fourth edition upon a long suffering public, he should leave out all erroneous titles, cancel patients' letters or testimonials, and sell the professional part of the

as a bonâ fide contribution to Medical Science. In its present form this work is only suited for distribution to young married ladies, residing near Kennington, and who have failed to engage the services of a professional man *in case they should require them,* a state of matters that is now somewhat joyfully anticipated by more than one of Mr. Townley's constituents.

A Treatise on Modern Median Lithotomy, being a description of its introduction, reception, and progress. By GEORGE ALLARTON, M. R. C. S., formerly Deputy Coroner for South Staffordshire; Author of "Lithotomy Simplified," "Mysteries of Medical Life," &c. London: HENRY RENSHAW. Strand. 1863. 12mo., pp. 520.

THE name of Mr. Allarton is so intimately associated with the Median operation for Lithotomy, that we received this book without surprise, and, having read it, we must add with regret, we do not think the author will benefit himself very materially by his present contribution to Medical Science. We do not for an instant desire to imply that this book does not possess very considerable importance as an able examination of all that can be possibly said for and against this single operation; but unfortunately it is impossible to lose sight of the fact that the author is constantly either attacking somebody who fails to agree with him, or unduly praising some other person who has expressed a leaning towards Median Lithotomy.

Adverse reviewers form, of course, a natural object of the author's indignation, and he appears to have sought out from all current periodicals any contributions that could be possibly construed into a doubt of his infallibility, and deals with them as suits the heinous nature of their offence. In addition to the usual "Introductory Remarks" in which pugnacious authors usually indulge, there is a most remarkable "*Address*" to those contributors who have afforded to Mr. Allarton the result of their experience of this subject. In this address, extending over four pages, we are favored with a lengthened apology, shewing why this work did not appear sooner, and the author uses some very severe, and

by no means complimentary, epithets, regarding the social and mental qualifications of the population of some rural scene of practice to which he fled from London in search of health. These matters are altogether so foreign to the subject in hand, that we wish they had been omitted.

The nature of the operation known as Mr. Allarton's, is no doubt familiar to our readers, and equally certainly possesses very strong claims to be employed in lieu of the lateral operation, than which it is more simple, and much easier of performance. But, like other fancies of supposed inventors, it is not suitable for all cases, and it certainly appears to us that it was hardly necessary to publish more than 500 pages of matter regarding it.

Mr. Allarton unhappily criticises with great severity, and occasionally with objectionable personality, every person who has attempted to impugn the correctness of his glowing picture of Median Lithotomy, but we must say that he is equally liberal of expressions of professional admiration and affection for every person who leans to his view of the question. He asserts, as a fact, that Booksellers were instructed to declare that his work called "Lithotomy simplified," was out of print, and that all the powers of the Circumlocution Office were had recourse to by his brother-professionals in England, Scotland, and Ireland, to prevent the public exposition of his views. He attributes the opposition which he met, to a blind belief in established usage, and in the success of the lateral operation. He also asserts that personal dislike to himself, and jealousy of his success, prompted many an unkind refusal to perform his operation. On this point we can only say that we, in common with many of our professional brethren, have always regarded his modification of Lithotomy as a very valuable addition to modern Surgery, and we do not believe that among members of the Medical profession such motives as those suggested by Mr. Allarton are allowed to have weight where the comfort, if not the life, of a patient is dependant on the skill of the operator.

In the second Chapter of his work, Mr. Allarton considers the objections that exist to the practice of lateral Lithotomy, but his picture of the difficulties attending its performance; of the dangers likely to arise from it; of the fatality known to result from it; and of the wonderful importance which Medical men attach to rapidity of operations pub-

licly performed, is completely overstrained and tinted with that jaundiced hue which overspreads everything except his own operative *protegè*. On the subject, however, of rapid operations, he alludes to an anecdote regarding the late Professor Cusack, of Dublin, which perhaps may be read with advantage by all whose position might possibly subject them to the ordeal which proved too much even for one of his experience, and whose operative skill was beyond all question.

"The late Mr. Cusack, of Dublin, was another instance, and few men, we are told, equalled him as an operator. He, like Cheselden, and Mr. Smith, of Leeds, had the manliness and moral courage to confess that he suffered greatly at the mere prospect of operating of a fellow-creature. "I am," said Mr. Cusack, "so anxious before operating, that I feel the strain too much for my system. You will be surprised when I tell you that from my first to my last operation, I have never been able to sleep the night before, but lay thinking how I should operate, what difficulties would arise, and how I should meet them." His biographer remarks, that "he was cautious, yet bold,—more desirous of aiming at excellence, safety, and completeness, than at daring rapidity and effect. He was once tempted to a display which might have affected him injuriously, had he not possessed the admirable instinct of readiness and self-command." "I was operating," said Mr. Cusack, "on a case of stone. They were all present (Crampton, Peile, and so on,)—and they must needs time me. I cut into the rectum there and then, but they did not see it, and I did not tell them. Notwithstanding all the patting on the back I got,—and what a fine fellow they said I was,—you will never see me operate when I am timed again!"—and although the man recovered, Mr. Cusack never got over his dislike of being timed, nor would he allow himself to be minuted if he had a suspicion it was being done."

We are not of opinion that Mr. Allarton is justified by general professional experience in asserting as he so very frequently does that operative Surgeons would prefer to perform an operation rapidly, rather than scientifically, and that they are utterly careless as to the subsequent result of a case, provided they can make it a means of display before an admiring and crowded audience. Such passages as the following should, we think, never have been written; and they bring discredit not only upon Mr. Allarton's correct knowledge of professional feeling, but even upon his own operation which has secured a champion with so little taste.

It must be to every one a subject for private judgment whether or not they will adopt the Median or the Lateral

incision, but should they, if electing the latter, be subjected to such imputations as are contained in the following passage? (Page 85.)

"No matter what the results, there will always be found Surgeons to practice lateral lithotomy as long as they can get spectators to patronize them, and for this simple reason that they have acquired dexterity and skill in doing it. To such men the death-rate will be as nothing,—applause everything. They will content themselves with the comforting assurance that after all their success is no worse than their neighbours! In vain may we remind them that the "three incisions made in rapid succession" do not always conduct the Surgeon to the bladder, much less to "the stone in waiting!" In vain may we remind them that the knife will sometimes find its way into the rectum, or between the rectum and bladder, or through the neck of the bladder and sometimes through the bladder itself! or through the pudic artery! and that occasionally the stone "which lies ready for removal" cannot be removed—nay—that it sometimes cannot be found, and that now and then in spite of these "three incisions rapidly made" the bladder itself is not found! and the poor patient, (if he meet with a humane Surgeon like Mr. Hilton) may even have to be removed to his bed either to die, or to await another and more successful attempt. Nor am I stating a single and exceptional case, for unfortunately there have been very many such cases! Well may the authorities before quoted, call this "the great operation of Surgery"—well may they exclaim that "no reward is sufficient to compensate for the anxieties attending the task of the lithotomist"—well may they advise young Surgeons "not to attempt it, especially in private practice unless unavoidable"—well might Sir C. Bell administer reproof to the "unfeeling" and to the juvenile time-keepers who estimate the lithotomist's task by a stop watch! when such men as Cheselden paled before its difficulties and dangers. But it is not the difficulties of the operation alone, which render a simpler method desirable it is its cruelty and its monstrous fatality."

The third Chapter is exceedingly interesting and contains a sketch of the different Lithotomy operations most frequently referred to, from it we quote Vidal's classification of the several operations which have been had recourse to for the abstraction of stone, from the urethra, the prostate and the bladder. The same chapter contains a good many remarks concerning the method of practising Lithotrity, and institutes a comparison between the author's own pet operation and those of Marian and De Borsa. Like the rest of the book this chapter is essentially controversial, and in almost every page we are either encouraged to blame some-

body for having the audacity to dispute Mr. Allarton's infallibility, or else we find ourselves, and not unfrequently, anxious that these personal passages had been fewer in number, more generous in their character, and more courteous in their tone.

The following is M. Vidal's classification of the various Lithotomy operations.

Urethral Lithotomy. The internal incision enters the urethra only when the operation is regular.	A. With dilitation and laceration.	1. Method of Joannis de Romanis.
	B. Incision boutonniere, or button-hole incision.	2. Regular method, (that is reduced to rules.)
Prostatic Lithotomy. The incisions when regular, do not exceed the limits of the base of the prostate.	A. Median.	1. Method of Vacca. 2 Method of Sanson.
	B. Unilateral.	1. Method of Francs. 2. Method, ordinary.
	C. Bilateral.	1. Method of Dupuytren. 2. Method of Senn.
	D. Quadrilateral.	1. Method of Vidal.
Vesical Lithotomy, In which the bladder is necessarily divided.	A. Perinæal.	1. Method of the Ancients. 2. Method of Frere Jacques. 3. Method of Foubert.
	B. Rectal.	Method of Sanson.
	C. Hypogastric.	1. Method of Francs. 2. Method of Rousset. 3 Combination of methods, invented subsequently. 4. Ordinary method. 5. Vidal's protracted method, or "en deux temps."

Thus there were two kinds of urethral lithotomy in past times — the one known as Roman John's, and the other as the "button-hole operation," the last was merely the first, reduced to rules. This operation was published to the world by Roman John's friend, Marianus Sanctus, and has since been called the Marian operation. The principle of this operation was to make an aperture through the perinæum, into the urethra; so as to similate it as much as possible to the female urethra, and thus obtain a short cut to the bladder, capable of giving exist to calculi. An incision was made in the perinæum, in the middle line, commencing at the scrotum, and terminating from five to seven millimétres above the anus. The parts were divided down to the bulb of the urethra, and as soon as the bulb had been freely divided upon the staff, the section of the soft parts was complete. Through this opening various instruments were introduced into the bladder, with a view to dilate its neck.

When the opening was deemed sufficient, tongs were introduced to extract the stone.

The Boutonniére operation was the rude operation of Roman John,

reduced to rules, such as anatomical experience had taught. It was made a strictly button-hole, or urethral operation, and consequently suited to small calculi. A staff was introduced and kept in the middle line, then an incision was made, beginning from 23 to 27 millimétres above that orifice, the incision comprising the recto-urethral triangle. The staff being felt, the nail of the left index finger was inserted into the groove and a sharp pointed bistoury, guided by the finger, was pushed into the urethra, and an incision of from 16 to 18 millimétres was made, commencing behind the bulb and terminating at the prostate. The finger was then passed into the wound and the forceps introduced. The difference, therefore, between these two operations is this—in the first the bulb is divided and from the bulb to the bladder dilated. In the second the bulb is not incised, but the membranous urethra is divided, and the prostatic urethra dilated. The median operation originated in the attempt of Maréchal and Méry, to continue the incision, made in the "button-hole" operation, through the inferior part of the prostate, and in methodizing this principle, Vacca originated or created the Median operation.

Mr. Allarton contrasts his own operation with that of De Borsa, of which it is merely a modification, differing from it essentially in three particulars, but he expresses in no measured terms a very liberal amount of indignation that any one should question his claims to pure originality. Perhaps it may not be uninteresting to adopt the plan which he himself does, of contrasting the three modes proposed for the Median incision, and we will thereby see that Mr. Allarton has certainly effected a considerable improvement upon De Borsa's mode of procedure, while the brief statement of Mr. Allarton's own plan may serve as a guide to those who have yet to try it for the first time. That it does possess considerable advantages, cannot be denied, and it is to be regretted that it has not been allowed to gain a legitimate place among the recognised operations employed for the removal of calculus. It is exceedingly easily performed; it is almost impossible to miss the bladder; little cutting is required; the neck of the bladder is uninjured; and the prostrate is not divided.

The following is the Tabular Statement given in Mr. Allarton's own words, and shewing the contrast to which he attaches such very great importance:—whether our readers will imitate him in this respect is a question upon which we need not now enter. The statement is, however, an interesting one to those who care to trace progressive improvement in Surgical operations.

Table shewing the difference between the following Operations.

THE MARIAN.	DE BORSA'S.	ALLARTON'S.
A grooved staff was introduced and cut down upon in the middle line. The incision commenced at the scrotum and was carried downward, a little to the left of the raphé, to within 5 to 7 millimètres of the anus. The bulb was freely divided and the membranous and prostatic urethra stretched or lacerated by means of the apparatus major. When the opening was sufficient tongs were introduced and the stone extracted.	A grooved staff is introduced and an incision is made downward in the middle line until it reaches the groove of the staff. The membranous urethra is slit down from the bulb to the prostate. The finger is introduced into the wound and pushed alongside the staff into the bladder. The staff is then withdrawn and forceps introduced to extract the calculus.	A grooved staff is introduced. The left index finger is inserted into the rectum, its point resting against the prostate, so as to fix the staff and serve as a guide for the knife. The perinæum is now pierced just above the anus and the knife pushed on with its back to the rectum, until it touches the groove of the staff. Its point is then pushed into the prostate about $\frac{1}{4}$ or $\frac{1}{2}$ an inch and the membranous urethra slit up to its full extent, the knife cutting upward and out. A bullet probe is now passed along the groove of the staff, into the bladder and the staff is withdrawn. The left index finger is then gradually introduced along the probe into the bladder and forceps used to extract the stones.

Chapters 4, 5, and 6, consist of cases by several authorities who have adopted Mr. Allarton's operation in certain instances. This portion of the work might be very much abbreviated with advantage. The general impression derived from the perusal of these Chapters is, however, favorable to *it*, and we think that Mr. Allarton is entitled to every credit for the remarkable diligence with which he has followed out the subject of Median Lithotomy. He has certainly placed before any one anxious to procure it, the most abundant means of forming a correct judgment as to its utility, and no one can rise from the perusal of the book without feeling that the profession is indebted in no slight degree to the research and diligence of the author.

The general adoption of this operation may certainly be looked for in a large number of instances which would formerly have been treated by lateral section, and there is very little doubt that Median incision is not only easier of performance, but that it is also productive of less shock to the patient and less likely to result in serious complications. Having admitted this, however, we must decline a more emphatic laudation of it, or any assertion of its invariable suitability.

PART III.

MEDICAL MISCELLANY.

No. 9.—*Hydrophobia, treated by the inhalation of Chloroform, with temporary relief.* By J. W. MUDGE, M.D., Surgeon Major, Madras Army. Formerly Surgeon, 2nd District.

S. P. LEWIS, Æt. 22, Portuguese female.

January 20th, 1861.—Admitted at a quarter to 10 A. M. in a state of confirmed hydrophobia. Is totally unable to swallow fluids, and, though asking for water, thrown into violent spasms by its approach or even by the sight of a wet cloth.

Her relative, who accompanied her, states that on the 14th December last, while on the journey from Bangalore, she got out of a transit carriage at some village, when a dog bit her in the right hand near the wrist. She arrived at Madras on the 16th December, and went the same day to the Chindatrepettah Dispensary, where caustic was freely applied to the wound.

She attended there for some days and the caustic was repeated on several occasions. At the end of three weeks the wound entirely healed, and there is now no irritation; new skin is thoroughly formed; a little dry cuticle remains partially detached. She has had no pain in the wound since it healed and was well till two days before admission, when she first got an attack of rigors, followed by fever; this fever left her the next day, though she still felt unwell. At 6 A. M. this morning she first noticed a dread of water and spasms.

After admission, that is four hours after first perceiving hydrophobic symptoms, the spasms were very frequent, especially when she was touched or even approached; there was excessive hawking and spit of viscid saliva, with much jactitation and frequent screams; the body bedewed with sweat: she continued in this state for about three hours, the symptoms increasing in severity.

Six grains of Extract Cannabis Indic. were put into the mouth, but it is not certain that they were swallowed.

℞. Tinct. Cannabis ʒ iss.
Tinct. Opii. ʒ ss.
Muc: G. Acac. ℥ii. Mt.
Ft. Enema.

This was also administered, but the operation caused very violent spasms.

It was now attempted to cause the inhalation of chloroform. At first the patient dreaded the approach of the moist cloth, but after inhaling a little of the vapour the spasms began to subside. She then shewed a great desire for the anæsthetic, and in the course of ten minutes became quite calm. The excessive perspiration and hurried breathing entirely ceased. She allowed herself to be touched and moved without any spasm supervening. She also spoke a great deal and described all that had happened; talked of water and her desire to drink without any uneasiness, and expressed the greatest relief. The pulse at this time was exceedingly small and rapid, 144, or upwards in a minute; the action of chloroform was kept up at intervals, whenever she asked for it, for about two hours. During this period she was perfectly rational and expressed great thanks for the relief afforded.

About a quarter to 4 P. M. she turned over from her back, on which she had been lying, to her left side; a slight spasm was noticed and a little froth came from the mouth—the attendant on wiping this off, found she had expired.

Remarks.—I have thought this case, which was treated in the Vepery Hospital 2½ years ago, interesting, chiefly on account of the great relief which the inhalation of chloroform afforded. The patient was in a few minutes changed from a condition most distressing to witness to one of comparative comfort. She might have signed a will or made any provision for the disposal of property, or performed other acts often of the greatest moment to children or survivors, and although we are scarcely warranted in stating that life was prolonged by chloroform, yet the effects were such as to encourage the careful use of this agent in similar cases. The patient was so astonished at the transition from intense suffering to ease and rest, that she could not refrain from repeatedly expressing her gratitude. Her words were rapidly

uttered, "Thank you, Sir,—very much obliged to you, Sir,—great deal better, Sir,"—the utterance gradually becoming slower and less excited.

Death appears to have been immediately due to spasm of the heart.

In regard to the application of caustic to the bites of mad dogs, it would not seem to be alone sufficient. It has long been laid down as a maxim that the surface which has come in contact with the poisonous saliva should be excised and caustic *afterwards* applied. Some have gone so far as to assert that strong nitric acid is the only reliable caustic even after excision. Without endorsing this last statement I would urge the propriety of always cutting or scraping away the bitten surface before applying the cautery. If we cannot cure we should at least spare no pains to prevent so terrible a malady.

No. 10.—*On the treatment of certain nervous affections by Electricity.* By the EDITOR.

THE foregoing case of hydrophobia forms a but too good sequel to the series of cases reported in our last No. (pp. 170—179.)

Shortly after their publication, we were struck with the following notice of a proposed mode of cure. We reproduce the passage in its entirety as it is to be found in "Braithwaite's Retrospect," Vol. 47 (January to June 1863) *Synopsis* pp. xiii.—xiv.

"HYDROPHOBIA; *Electricity.*—A patient suffering from "hydrophobia, and so far advanced in the disease as to have "become entirely unmanageble, was secured and bound to a "mattress, and a copper wire being wound round both "feet, the conductor of the negative pole was attached to this "wire, and the conductor of the positive pole through a "sponge saturated with vinegar and salt, was applied to "the throat, and over the spine and body generally, with "the full power of the battery. This produced instantaneous "cessation of the spasms, and while under the influence "of electricity, the patient willingly drank liquids and water "free from the usual horror of them. The current was conti-"nued for some hours, with intervals of omission: the patient

"began to collapse, then vomiting and purging freely followed, "and finally he fell asleep, and recovery ensued. This case, "which occurred in New York, under the care of Dr. Lassing, "seems extraordinary, and we should be glad to hear of a re-"petition of the experiment in England."

In the foregoing wish every one must heartily agree, and in order to enable our readers to try this experiment, we have determined, in opposition to the practice of this Journal, to reprint *in extenso* the contribution to Medical Science, an abstract of which is given above. As the original was not available, we re-print from the "Dublin Medical Press" of the 12th November 1862. This Journal quotes apparently from the "Philadelphia Medical and Surgical Reporter."

"ELECTRO-THERAPEUTICS.

"*By* H. LASSING, M. D., *of New York.*

"HYDROPHOBIA; TRAUMATIC TETANUS; TRISMUS; ELECTRO-MAGNETISM AS A SEDATIVE, ANÆSTHETIC, CATHARTIC AND RELAXANT."

"*Hydrophobia.*—In October 1859, I was called to see a "young man, aged 19, who, as the neighbours said, had been "bitten by a mad dog some two months previously. The "dog had refused food for over a week before he bit this man. "Afterwards he foamed at the mouth, appeared to be blind, "and running in his mad career against a stone wall, dashed "out his brains. This young man had been sick several "days, complaining of pain over his body, headache, &c., "and, when I saw him, had strong symptoms of hydrophobia, "such as extreme nervousness, spasms, dyspnœa, great thirst, "foaming at the mouth, extreme anxiety, pain and uneasiness "about the prœcordia. He was continually begging for a "drink of water, but when any was brought evinced great "horror of it, and when exposed to his view for a few minutes, "he was thrown into convulsions by the sight. I began by "exhibiting opium and morphia, but after administering five "grains of the former, and one grain of the latter, and find-"ing no benefit therefrom, resort was had to various narco-"tics and sedatives by the mouth, arms, epidermis, and even "inserted into the cellular tissues and glands, without effect. "Various other remedies were administered, all without effect, "when I asked the privilege of several professional brethren

"present, to try electro-magnetism, which was cheerfully ac-
"corded me.

"The patient by this time having become entirely unma-
"nageable, making attempts to bite those around him, he was
"secured, and bound to a mattress, a copper wire being
"wound around both feet, the conductor of the negative pole
"was attached to this wire, and the conductor of the positive
"pole through a sponge saturated with vinegar and salt was
"applied to the throat, and over the spine and body generally,
"with the full power of the battery. This produced instan-
"taneous cessation of the spasms, and while under the influ-
"ence of electricity, the patient willingly drank liquids, and
"was free from the usual horror of them; but if they were
"near him, and the current of the machine was interrupted,
"all the previous symptoms would recur. I applied the cur-
"rent one half hour, the patient then seemed easier, but the
"symptoms of hydrophobia, though slighter, were still pre-
"sent. At intervals of an hour I applied the current again for
"half an hour, and after twelve hours from the time I first
"applied it, the patient seemed suddenly to collapse; the
"countenance seemed more anxious; the pulse, which was
"previously quick and full, now became very feeble; the
"tongue, previously swollen and dark-red, seemed more na-
"tural; and the eyes, which were glaring, and pupils dilated,
"now appeared glassy and sunken. The general appearance
"of the patient can be better described by saying that he look-
"ed like a sea sick person just previous to emesis; when sud-
"denly a copious perspiration was thrown out and free vomit-
"ing and purging followed, and he finally fell asleep. He
"awoke in about two hours, and appeared more normal, com-
"plaining only of a severe headache, and great weakness.
"We then gave him an infusion of scutellaria lateriflora, and
"left him. About a week subsequently, being sent for, found
"the patient had had a slight spasm again that day, which,
"however, never returned. The current, which he seemed to
"dread as much as fluids, was once more applied, and the
"patient left asleep. No more symptoms of hydrophobia
"recurred, and the patient did well for several months, when
"I lost sight of him. I should say that no more signs of
"hydrophobia recurred, had I not read a few weeks since,
"in an account of a battle, that he was among the killed
"while fighting in the rebel ranks.

"I omitted to state that chloroform and ether were both

"tried without any effect, previous to the use of electro-mag-
"netism.

"*Traumatic Tetanus.*—A little girl, aged 9, had run a
"needle into the sole of her foot, and while endeavouring to
"extract it, broke it off. The piece remaining worked its
"way through the integuments and, as I am informed, could
"be felt upon pressure at the instep, when a surgeon was
"called in, and after a severe operation of over an hour, par-
"tially performed while the patient was under the influence
"of ether, broke off another piece, not, however, without
"severely contusing the integuments and muscles of the part.
"During the ensuing night spasms set in, which, I now think,
"can be ascribed to the hæmorrhage and nervous irritation;
"but these soon ceased and the foot and limb became terribly
"inflamed. On the night of the ninth day, the spasms recur-
"red, and trismus set in. I was then called in, and ordered
"the Tinct. Opii. which my predecessor ordered as a lotion, to
"be stopped; considerable fluctuation could be felt, but the
"foot felt very hard, and appeared red, and highly inflamed.
"Patient's countenance betokened great anxiety and pain;
"pulse irregular. Partially owing to spasms of the abdomi-
"nal muscles, and partially to the large quantities of opium
"previously administered, she suffered from obstinate consti-
"pation. I immediately injected about a pint of a solution of
"ox-gall in water, and retained it by pressure, but no stool
"was produced,—when I extracted two lateral incisors, and
"inserted the negative pole conductors, properly insulated on
"the tongue, and passed the positive pole up the rectum,
"which produced instantaneous peristaltic movements, and
"was followed, in about fifteen minutes, by a copious stool.
"While the current was passing, the spasms ceased, the
"patient was able to open and shut her mouth. After apply-
"ing the current for a few minutes over the body generally,
"I connected the negative pole with a curved bistoury,
"and laid the tumified parts well open. A large quan-
"tity of pus escaped, and with it the remaining piece of the
"needle. I then dressed the wound with simple cerate, and
"administered morphia in syrup papaveris in 1-32 grain
"doses. Next day, after a good night's rest, found the pa-
"tient much improved; pulse more regular; free perspiration
"had set in, and the wound seemed healthy, discharging con-
"siderably. A short spasm returned this day, but was speedi-
"ly subdued by the electro magnetic current which was
"mildly applied over the body generally, especially the spine

"and affected limb. Every day day for a week beef-tea broth, "brandy-punch, and toast were freely given. The wound "healed by first intention, and the patient was out of her bed "in another week; and now, two months since I treated her, "is playing around the street, perfectly well. In both of "these cases I believe the spasms were subdued by the seda- "tive action of the elecro-magnetic current upon the nervous "system. Its anæsthetic action is also shewn, as well as its "effect, as a cathartic."

We are not in a position to comment on the foregoing; but we think that the effects of the remedy in Hydrophobia, especially as regards the immediate cessation of spasm, and the tolerance of fluids, are worthy of all consideration.

No. 11.

A CONSPECTUS OF MEDICAL AND SURGICAL PRACTICE IN INDIA.

Guntoor Dispensary.

Wound of the Abdomen; Protrusion of Intestine; Patient, a female six months pregnant; Recovery.

[*Under the care of* Mr. Crowdace.]

Uckamah, Æt. 26, female pauper, was admitted on the 25th February 1863, at 10 P. M., having been brought to Hospital from a village about four miles distant from this station. The patient was attended by her mother, who stated that, about 4-30 P. M., she (the patient) was attacked by a buffalo and thrown down; after being taken home, it was discovered that she was bleeding from the "belly." On examination, finding a large portion of intestine protruding, attempts were made by some neighbours to put it back without success; they then brought the woman to the Dispensary.

On her arrival at 10-30 P. M., it was found, on examination, that two loops of intestine protruded and covered the umbilicus. By careful and gentle manipulation, for about twenty minutes, the protruded intestine was returned, and it was surprising to find so small a wound through which the intestine had escaped; it was found to be only $1\frac{1}{2}$ inch in length, above $\frac{1}{2}$ an inch in breadth; and through this small opening,

which was only half an inch above the umbilicus, no less than *nineteen* inches of intestine had protruded.

The external wound was closed by suture, when the fundus uteri could be felt extending up to within half an inch of the umbilicus. At this time the pulse was 84; respiration 20, and the patient stated she felt much relieved.

Tinct. Opii. xl. was given immediately, and half a grain of opium every three hours during the night.

26*th February.*—Slept about two hours after taking the second (½ gr.) dose of opium; complains of pain at epigastrium; there is considerable swelling and tension in umbilical region; no febrile symptoms. Tongue clean; pulse 82; has passed urine.

To take opium gr. half ter die.

Vespere.—6 P. M.—Abdomen still distended in umbilical region, and tenderness on pressure over this part. One of the sutures was cut, when about 3. iii. of serous like fluid exuded through the opening.

℞ Calomel gr. v.
Opii. gr. i. *Statim.*

27*th.*—During the night there was a copious discharge of serous fluid, and patient feels much relieved.

To continue opium quarter of a gr. three times a day.

Vespere.—There is still tenderness of abdomen on pressure. Pulse 94.

Continue opium as before.

28*th.*—Slept well all night; skin cool; less tenderness of abdomen; tongue clean; pulse 92; bowels have not been moved since admission.

Continue opium gr. quarter ter die.

1*st March.*—Has much less pain and tenderness in abdomen; skin cool; tongue clean; pulse 78.

2*nd.*—Bowels moved for the first time since admission, and without laxative medicine.

3*rd.*—Bowels opened again this morning; tongue clean; pulse 76; has a good appetite and asks for mutton.

5*th.*—This morning the fœtal heart was heard distinctly on the right side of abdomen, and about midway between the umbilicus and right ilium.

From this time the patient continued to go on favourably till the wound was healed. The fœtal heart was heard again a few days before she was discharged from Hospital on the 20th of March.

In the Civil Dispensary General Hospital, Madras.

Reported by Assist. Apothecary W. D. Stewart.

Rabies.

Chellappen, Æt. 9 years, male, Hindoo.

A Malabar lad of stout habit of body brought into Hospital at 4 P.M., 14th August 1863, presenting the following symptoms.

In a state of frightful agitation, looking about him wildly, as if suspicious of those around. His hands were tied before he was brought in, his father stating that he made several efforts to bite himself and others. Muffled up as his hands were in cloth, he frequently bends over them in the attempt to bite. His tongue has been injured and there is foaming of bloody saliva. A scream, expressive of terror, is every now and again heard, and as often a general spasm seizes all the muscles and produces a convulsive shudder. It is with difficulty the lad can be made to answer questions; though rational, his answers are short and abrupt. There is no complaint from him. The voice is hoarse; he is very restless; eyes prominent, bloodshot and widely open, pupils contracted; breathing hard and difficult; pulse scarcely perceptible at wrist, small and quick in axilla; heart's action feeble. Water dropped on him, or agitated near him, induces a paroxysm. When fluid was administered, he attempted but failed to swallow, a paroxysm following the attempt. The general surface is extremely irritable, the slightest touch or contact of any article involving a spasmodic seizure.

℞ Tinct. Cannabis ♏ xxx.
Aquæ———— ℥ iss.
Mft. ht. st. sd.

5½ P.M.—Swallowed a portion of the draught. Is not so violent, but much lower; spasmodic seizures not so frequent the result more of exhaustion; swallowed a spoonful of broth.

6 P.M.—Sinking. Pulse very feeble and indistinct; conjunctivæ dry; eyes fixed; breathing hard; rattling in throat.

6¼ P.M.—Had a succession of fits, after which extreme exhaustion followed. Expired.

History.—His father states that a month ago the lad accompanied his sister one evening to a well near the Lighthouse, where he was bitten on left fore-arm by a strange dog, which he has not seen nor heard of since. At the time of the accident people said the dog was mad, but not with any certainty. Next morning the milk of the Calatropis gigantea was freely applied and the parts cauterized. He showed no symptoms of illness up till Wednesday the 12th Instant, at 7 P. M., when he complained of pain in left elbow joint, which increased and extended up to shoulder next morning. At noon yesterday, he had a feverish attack, the heat of skin lasted, more or less, till to day. He continued restless all the while, and at 12 o'clock last night called for some water. On attempting to drink it, first showed some dread of the fluid, then drank with difficulty. This difficulty and dread gradually increased. Some native remedies were administered with no relief. He was able to talk and was pretty well up till 11 o'clock to-day, when he became violent, grinding his teeth, attempting to bite and very difficult to control.

No post-mortem could be held as the parents objected to it.

No. 12.—*Tetanus (Trismus Idiopathic); treated by Local and General Antiphlogistics; Cure.* By T. LOWE, Assistant Surgeon, Madras Sappers, Dowlaishweram.

PRIVATE Kistnaidoo, Æt. 25, service six years, Sappers.

12th August 1863.—This man was admitted on 29th May with fever, from which he gradually convalesced, when a swelling made its appearance near the internal condyle of left humerus, which was treated by blisters, dressed with Morphia, and lastly with Iodine paint, under which treatment it gradually lessened, but did not disappear. (Query,—Perhaps, a fibroid tumour from the periosteum pressing upon the median nerve). This day, the 12th—a very rainy, cold day—he complained of pain and stiffness, about the lower jaw, which had somewhat the character of neuralgia, and which continued for three days; on the third day I observed the man was actually laboring under gradually developing trismus. His bowels had been constipated for two days; he had not slept for three nights; his skin was dry; and he

could only open his mouth about half an inch, both sides of the jaw were painful, and he felt stiffness coming on in the neck; pulse quick, full.

15*th.*—Ordered, Calomel,

Scammony,
Colocynth,
Aloes āā grs v.; in pil iv.
Two s.s.

Mist. Purgant. ℥ iii. Post. horam et,
Repeat Pil ii. Post horam second.

Vespere.—Bowels open ten times during the day; stools dark green, lumpy, and very offensive and copious. Says he feels much relieved. Skin moist; tongue foul, edges red, papillæ very prominent.

16*th.*—Bowels moved thrice during night; *slept a little;* is able to open the mouth one third of an inch more; tongue foul on posterior half, papillæ very prominent; skin moist; complains of the stiffness and pain in the jaw and neck.

Repeat Pills et Mist. Purgant ℥ iv. 4 hours afterwards.

Hirudines vi. to the neck, to be followed by Emplast Lyttæ.

To put on more warm clothing.

Vespere.—Blister rose well; bowels moved eight times since morning—stools copious, scybalous, dark green and very offensive. Is able to open mouth so that a finger can be passed in; pain and stiffness less; *has slept during the day since leeches were applied;* is perspiring freely.

17*th.*—Does not complain of pain now, only of rigidity of the masseters; opens mouth so that two fingers can be passed in; bowels have freely acted—stools watery; yellowish; can show tongue pretty well, which is cleaner, but very red. *He slept well during the night,* and now looks quite refreshed; skin warm, moist; blister open.

Continue medicine as yesterday.
Mercurial ointment to blistered surface.

17*th.*—*Vespere.*—Has walked about a little to day. Has no pain in jaw, rigidity gone, still he has slight stiffness about the articulation when he opens the mouth; tongue whitish; skin dry; bowels open four times since morning—stools watery, bilious, scalding.

18*th.*—Is in a most excessive perspiration all over the body; slept well last night, can move jaw very freely without any pain or stiffness; bowels freely open; tongue paler; appetite good.

℞ Quinæ Disulph: ℈ ii.
Acid. nit. dil. ʒ iii.
Spt. Ætheris nit. ℥ ss.
Tinct. Opii ʒ ss.
Aquæ Camph. ad ℥ x.
Dos. ℥ i. ter. die.

19*th.*—Improving in all respects. Bowels freely open.
Cont. mixture.

20*th.*—Doing well.

22*nd.*—Is improving daily.

Since last report has continued to go on well. Was sent for change of air for four months to the sea-coast.

Remarks.—This man had suffered from fever and was convalescing slowly. The temperature of the air had diminished much a few days prior to the manifestation of the *Trismus.* On the 12th of the month the Thermometer stood at 76°, 77° and 75°; the day was cold, cloudy, and rainy, and this weather continued more or less till the 20th, when the Thermometer rose to 89° at noon, and the rain ceased. It was, during these cold, damp days that the nervous derangement in the form of lock-jaw manifested itself. Cutaneous transpiration and normal action of the abdominal viscera were arrested. The good effects of the drastic purgatives on the 15th are evident; still, on the 16th, as the spasm was but little relieved and he began to complain of stiffness in the neck, I lost no time in effecting depletion from the neck by leeches and a blister, while I continued also to act upon the cerebro-spinal system from the alimentary canal by a continuation of the purgatives.

On the *evening* of the 16th I found he had *slept well after the leeches were applied,* having also passed eight copious offensive motions during the day. The next day, the 17th, he could open mouth well, nigh to its full extent, and had passed a good night.

On the 18th, *i. e.*, seven days after trismus appeared, and the abdominal viscera began to act normally, he had a

critical perspiration, after which he convalesced under the use of Quinine and mineral acids, every symptom of nervous disorder having vanished under the antiphlogistic method of treatment formerly advocated by me in the No. of this Journal for January 1863.

No. 13.—*Memorandum on Conservancy.—For the guidance of Officers Commanding Stations, Batteries of Royal Artillery, Regiments, and Detachments, circulated with reference to G. O. C. C. dated 5th February* 1863, *publishing the modified scale of establishments sanctioned by Government, with a view to the new dry surface system being properly carried out.*

[We are indebted to the courtesy of Major Lawder, Deputy Quarter Master General of the Army, for the opportunity of publishing the following Memorandum, originally issued by the Quarter Master General of the Bengal Army. We hail its appearance gladly as showing that Dry conservancy will be soon carried out in Southern India.—Ed. *M. Q. J.*]

Under the head of Conservancy must be considered the entire arrangements for preserving due cleanliness in Stations, Lines of Regiments, Bazaars, Slaughter Houses, &c.

To ensure this in the best manner, it is necessary that the establishments should be sufficient, and that the best forms of Privies, Urinals, and Lavatories, with their concomitant receptacles, carts, &c., should be made use of.

The Conservancy of Stations, Bazaars and Slaughter Houses will be fully entered into, in a General Order shortly to be published; Regimental Conservancy has therefore only to be dealt with in this Memorandum.

Privies.—The standard design of a Privy for European Troops, as approved of by the Commander-in-Chief, and sanctioned by the Government of India, on the 30th September 1858, has proved to be the best adapted for this country, provided that the ventilation is somewhat improved by openings near the floor, higher up in the side walls, and in the roof, and that the floor is evenly and closely tiled or slated, to admit of its being easily swept and brushed.

These improvements are now sanctioned, and orders have been issued for their being carried out, as soon as possible, wherever they are required.

This privy can always be kept clean and pure, if certain details are carried out, and a proper system strictly adhered to.

The principal object of the dry surface system is that no evacuation, solid or fluid, should touch the floor; that every thing should go into a pan, which is to be removed from the rear, emptied, and replaced.

To ensure this, two iron air-tight receptacles are allowed for each Privy, to receive and keep the contents of the pans, pending their removal by the carts.

Seats.—Wooden seats are best, fixed as in the Government plan, but without covers, which, in this system are not required, as no affluvium should escape. Covers are easily damaged, and Soldiers will not trouble themselves to shut them down. Wood can be kept quite clean, if washed once a day, and scraped as often as necessary.

In the Government plan, of 1858, the height of the seat is 1 foot 6 inches, and of the rear opening 1 foot 4½ inches. This latter will be made 2 feet high, to give a clear space of 6 or 7 inches above the seat, good for ventilation, and also for enabling the Sweeper to see, from the outside, when a pan is being used.

The seat will rest on stone or masonry, instead of on wood as in the Government plan, leaving the front open, to allow of the front being seen, to afford entrance to air, and easier access for sweeping.

A ledge of wood extending downwards is necessary under the front of the seat, to prevent the pan being pushed too far forward.

Pans.—In the Government plan, the pan is an inch below the under part of the seat, whereby urine especially is liable to escape; the pan is also 1 foot 4 inches in depth, this will be altered to one of 8 inches in depth, resting on a solid foundation 9 inches in height. This has the following advantages: the pan is easier pulled backwards and forwards, easier cleaned, and handier altogether; it also fits "chockup" under the seat, which is essentially necessary, and cannot, by careless handling, go anywhere but directly under the seat.

Air-tight Iron Receptacles.—The receptacle, above referred to, should be kept behind the screen wall of the privy to receive the contents of the iron pans as they are used; in it

the filth can be kept, without offence, through a portion of the day or night, pending the arrival of the cart.

This receptacle is air-tight, and is to be lifted bodily into the cart, so that no offence to health, sight, or smell can possibly take place, either in the privy itself, or on its passage through the lines to reach the trenches in the open country.

It is *essentially necessary* that a sweeper should always be on duty behind the screen wall of each privy, to be ready to remove a pan *directly* it is used, empty it into the receptacle, rinse it out, taking care to pour the rinsings into the receptacle, and then, leaving 2 inches of clean water in the pan, replace it.

Urinals.—The Standard Urinal sanctioned by the Government of India, on the 30th September 1858, is, with some slight alterations, found to answer very well.

The iron circular movable rim to fasten down the pan is omitted, as being in the way, and its use questionable.

Pending the supply of iron enamelled pans, kiln-dried earthen vessels, glazed inside and out, are recommended. The pan should come nearly to a point, and three holes should be at the most depending portion for the escape of urine into the urinal.

The pan should have an upper rim sloping upwards and outwards, so as to extend 1 inch or $1\frac{1}{2}$ inches beyond the side of the iron vessel, the rim is not continuous, part being hollowed out to allow the handle to be raised for portage or lifting. By this plan all drippings, which occur in urination are caught and directed into the pan, instead of trickling down the outside of the vessel itself.

To prevent any chance of the floor being soiled, the urinal should stand in an iron tray $1\frac{3}{4}$ feet in diameter, filled with broken up charcoal and wood ashes which will absorb and deodorize any fluid reaching it.

The urinals should be emptied morning and evening into the iron air-tight receptacle (a receptacle is allowed for this purpose to each urinary, in addition to the two receptacles authorized for each privy) kept solely to receive their contents behind the screen wall of the urinary; and once in the day *at least*, the earthen pan and urinal should be scrubbed inside and out with wood-ashes (kitchen fire refuse) or broken up charcoal, by the sweeper on duty, and once a

month coated with Dhoona, as already authorized in the Barrack Department.

Removal of Filth.—We now come to the system of carting away the filth, solid and fluid, and refuse of a Regiment, to a distance in the open country, to spots specially selected, so as not to be injurious to the neighbourhood, or the Cantonments.

For this purpose carts of a proper description will be supplied by Government. Those generally in use (country carts) are not well fitted; their pace is so slow that double the amount of time is consumed in their journeys; their space is so limited, that the extravagance of the system is great; and their build is so bad, that refuse matter is jolted out as it is carried through the lines.

The cart will be of a lighter description than the regular Ordnance cart; its flooring 6'×4' so as to allow of six iron air-tight receptacles being placed in it, and carted off at once; its sides 1 foot 6 inches high, well jointed, so as to allow of no escape of sweepings or litter.

To pursue the detail of system for a range of 10 Company Barracks with 10 privies of 8 seats each:—

For these there would be 30 iron air-tight receptacles, 20 for solid matter and the contents of the privy pans, and 10 for the contents of the urinals; 15 of them would have to be removed in the morning, and the other 15 in the evening. One cart should be kept for this purpose alone, the second might have one or two casks (to be obtained from the Commissariat) in it well bound and secured, to prevent leakage and escape of contents, and fitted with a capacious funnel; this will take away the fluid, refuse of the wash and cook houses; litter and the sweepings of the lines and Barracks also finding place in it. So long as the refuse of *wash* houses contains nothing but soap and water, and is untainted by urine or other filth there is no objection to its being used for the Barracks Gardens, or sprinkled by the sweepers over the ground around the Barracks and Out-buildings to lay the dust; this would lessen the labour of its removal to a distance.

The third cart is available for the Hospital, privies and urinaries attached to married Barracks, &c., &c.

The receptacles and casks are carted away to pits dug in a selected situation, *at least* ½ mile from the nearest Bar-

rack: the banks of a ravine, not connected with the station in any way, is the best site.

Six circular pits, (three pairs) are dug in line, each 10 feet deep, 6 feet in diameter, and 9 feet distant from each other, so as to allow of a cart passing between them.

On the first day one pair of pits should be used, the solid excrement being thrown into one of them, and the urine into the other, quicklime being sprinkled on the first, but *not* on the second pit.

On the second day the next pair of pits is to be used.

On the fourth day the *first* pair again, proceeding day by day in the above rotation, care being taken to keep the holes for solid and fluid matter *distinct:* the object of this is that by the fourth day, when the filth and urine have again to be thrown into their respective holes, the excrement will be found hardened, condensed, and nearly free from smell, and the urine absorbed into the earth, whereby much economy of labor takes place, the six pits lasting in this way some six months. The two Bildars, authorized to be kept up, will, in four days, easily dig one of these holes.

All the dry refuse of the Barracks and lines should be burnt at the pits; the refuse water from cook and washhouses can be emptied into the pits kept for urine.

Quicklime is an important element in the purifying of these iron pans and receptacles, if they are not coated with Dhoona, because it dessicates organic substances and prevents putrefaction,—yet it is not essential, for the pans, &c., can be kept tolerably clean by hand-rubbing with sand, charcoal, wood-ashes, &c. At some stations where quicklime is not procurable, this plan has been adopted with success, but pans can never be kept entirely free from smell without its use, as portions of decomposed matter will stick about them.

As there is often difficulty in procuring quicklime in its proper caustic state, and more frequently ignorance in using it, the following instructions are furnished for its test and use:—

1*st.*—Quicklime should be brought from the kiln properly defended from the access of air, or it will arrive slaked.

2*nd.*—On its arrival, only the stone, or harder parts, should be accepted; all that is in powder is bad, and unfit for use.

3rd.—To test if the stone part is good, pour a tea spoonful of water over a small piece of it, if it crackles and breaks up with some steam, it is fit for use.

4th.—The best way of storing the quicklime is in a cask, set on end and coated all over with an inch thick of clay. At the top end, cut a hole, line it with felt, and have a tight fitting wooden cover for it, also lined with felt, so as to preserve the contents entirely from air; quicklime thus stored will keep for three months in dry weather, but it is better to get it fresh from the kiln every month.

5th.—All the iron privy pans in use should be collected in one place, and cleaned once a day by the sweepers; a system should, however, be observed so that all the privies should not be devoid of pans at the same time. A piece of quicklime should be placed in each pan, and a spoonful of water poured on it; when it begins to break up, let the bottom and sides of the whole pan be well scrubbed with the mixture with a small brush, then rinse out with clean water, and the pan will be clean and free from smell.

6th.—No quicklime is to be brought into contact with urine, or used in any drain through which urine flows, or used for any vessel containing urine only; because the acid contained in urine has a very strong tendency to combine with lime in any form, and a strong ammoniacal odour is immediately evolved, which becomes persistent.

7th.—It takes 3 ounces of quicklime to clear one privy pan, 6 ounces for one of the receptacles, and 20 ounces for the pit in which excrement is thrown, on each occasion.

The due carrying out of all those details is, of course dependent on the efficiency of the Quarter Master and his establishment, and it is altering no custom, or adding extra work to his Department to have the above system strictly adhered to.

An Orderly is to be appointed from each Battery, Troop or Company, whose duty it is to inspect twice a day every privy, cook and wash-house, receptacle and urinal in use by the men of his Battery, Troop or Company, reporting to his immediate Commanding Officer the result of his inspection.

The Sweepers attached to each Battery, Troop or Company are to be under the orders of this Orderly, who will be responsible that they discharge their duties in an efficient manner.

The Officer Commanding each Battery, Troop or Company is, four times *at least* in every month, to inspect the privies, cook and wash-houses, receptacles and urinals belonging to the men, noting the result in a report to be submitted to the Officer Commanding the Regiment or Detachment, who will thus be able to remedy promptly any evils that may arise.

An Overseer or Conservancy Sergeant will shortly be appointed in each large Cantonment, whose duty it will be, in addition to a General Supervision over the conservancy of the station, to visit once every four days, every privy, cook and wash-house, receptacle and urinal, as well as the Regimental pits, public latrines, and all unoccupied grounds liable to defilement, within the limits of the Cantonments (some of them to be visited daily, so that in four days *all* may be inspected); the result of his inspection to be embodied in a report to be submitted weekly to the Officer in charge of the Station conservancy, who, after countersigning it, will lay it before the Officer Commanding the Station, who will thus be kept acquainted with the Sanatory condition of the Cantonment.

The usual Sanatory Reports of the Quarter Master of the week, and of the Senior Medical Officer, will come in as useful checks in the general conservancy arrangements.

When any Battery or Regiment is about to leave the Cantonment, the Officer Commanding the Station will give orders to the Officer Commanding the Battery or Regiment, that every part of the lines occupied by his Battery or Regiment must be left in a proper sanatory condition; and, on leaving the Cantonment, the Officer Commanding the Battery or Regiment will certify in writing to the Officer Commanding the Station, regarding the sanatory condition of the lines.

When any Regimental lines are left vacant, and no Regimental Establishment is available for the purpose, it will be the duty of the general conservancy establishment of the Cantonment to make the necessary arrangements for their maintenance in a proper sanatory state.

No. 14.—*Report on the Bark and Leaves of Chinchona Succirubra grown in India.* By J. E. Howard, Esq.

[From Government Records.]

TO THE UNDER SECRETARY OF STATE FOR INDIA.

Sir,—I have the pleasure of reporting that the specimens of Chinchona bark and wood, together with dried leaves, and decoction made from the same, reached me in good order on the 23rd of May last, and that I have since submitted them to careful examination.

The appearance of the bark indicates that it has been gathered and dried under favorable circumstances. It is full of sap, which, in some cases, exudes a little at the cut-ends, and forms what is called a resinous ring or circle. The specific gravity is considerable, and the thickness, especially of the fifteen months' old bark, is remarkable for the time of growth, being about one-tenth of an inch in some of the quills, which curl much in upon themselves in drying. The external surface is warty, and the color more of a tea green than is usual in the bark as it is imported from South America, but, as it is not cut there at so early a stage of growth, it is difficult to form an accurate comparison in this respect. The taste is that of "red bark," being compounded of the bitter of the alkaloids and the more nauseous taste of kinovic acid. The powder resembles that of good Peruvian bark.

In order to make the best analysis of the small quantity of bark at my command, I commenced with 500 grains of that of the second year's growth and was able to obtain therefrom a first and second crystallization of white sulphate of Quinine. By thus specifying the whiteness, I mean to imply that the bark had not the commercial disadvantage which frequently attends the "red bark" at a more mature stage of growth, resulting from the fact that the coloring matter has in these last become so much implicated with the alkaloids as to make the task of purification a difficult one. The crystallizations I obtained were mixed with some sulphate of Chinchonidine, which is commercially (but not medicinally a disadvantage, and one which always attends the products of "red bark." I also obtained Chinchonine, and other usual products of the process as from South American bark, viz.,

kinovic acid, kinate of lime, gum, Chinchona red, &c. The product of alkaloid in a rough state was estimated at 4·30 per cent. A second trial of the same quantity enabled me to decide more accurately the percentage product in *purified* alkaloids. I found the total contents 3·30 to 3·40 per cent., and of this (soluble in ether) Quinine and some Chinchonidine, 2·40 per cent., leaving. 60 per cent. of Chinchonine, which crystallized freely, and also ·30 or ·40 loss chiefly in water of the hydrated alkaloids. This result must be considered extremely favorable.

I have noticed the product of some fine quills of South American red bark as 3·60 per cent.,* the larger bark of the same parcel producing 3·91 of alkaloid. Dr. Riegel obtained from 1 oz. "red bark," of best quality, 4·16 per cent. by Rabourdin's process, or 3·90 by that of Buchner. Of this 2·65 per cent., soluble in ether, was reckoned as Quinine, and the rest was set down as Chinchonine.† I have obtained a much higher percentage of alkaloid from large and peculiarly fine "red bark," but I see no reason to doubt that even this higher percentage would be attained in the East Indies, if time were allowed for the growth.

The exact period at which it would be advisable to cut the bark must be ascertained by experiment; but I think this should take place as soon as the bark attains to a thickness which would repay the cultivation. There would be positive disadvantage in allowing the bark to attain such an age as is indicated by many of the specimens from South America, if the object to be attained is the extraction of the alkaloids; since there is a continual process of deterioration‡

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* "Illustrations of Nueva Quinologia," under head Ch: Succirubra, p. 15. "The characteristic peculiarity of Red Bark is that it ordinarily contains, and that quite irrespective of the brightness of the colour, a much larger proportion of alkaloid than most other kinds, amounting to as much as three to four per cent. of the substance of the bark, and this divided amongst the alkaloids, Quinine, Chinchonine, Chinchonidine, Quinicine? and Aricine?

"The finest sample in my possession, of the best quality of C. Succirubra (bright red throughout,) is of a parcel imported in 1850, containing 3·91 per cent. of alkaloids, which sold for 8*s.* 9*d* per lb. The quill of this same parcel yielded me 3·6 per cent. of alkaloids. This sort is represented by Bergen in his Monographic der China, pl. 1. fig· 5, 7, 8,9."

† "Pharm. Central-blatt," for July 1852.

‡ "Described in my "Illustrations of Nueva Quinologia" under head Ch. Succirubra, p. 14. "The pieces of flat Red Bark possessing the finest colour are generally remarkable for their specific lightness, having a texture analogous to that of wood that has lost its firmness by incipient decay. Indeed it is by a process of eremacausis that the red bark acquires its colour, the Chinchotan-

of these after a certain period of the history of the bark, which is connected with the oxidation of the red coloring matter, and the production, in very old trees, of those fine descriptions of bright red bark which command indeed a high price in the market (as much at the present time as eight shillings per pound,) but which would not, in many cases, be more valuable for the production of Quinine than bark of one year's growth.

I next examined the younger bark of one year's growth, taking care to select the most mature portion, and found that it yielded 2·59 of alkaloid of which 2·55 (soluble in ether) appeared to be Quinine and Chinchonidine, and in part crystallized into tolerably white sulphate, which showed perhaps a rather larger proportion of Chinchonidine than in the older bark. On the other hand, the proportion of Chinchonine seemed notably less, viz., only 0·04 per cent., but it is possible that the separation was not exactly effected between the Chinchonine and Chinchonidine, which is not easily accomplished by ether in such small portions.

The above result induced me to pay further attention to the leaves, concerning which the absence of any carmine sublimate by heat led me at first to an unfavourable conclusion. The decoctions and infusions made by Mr. M'Ivor though in perfectly good condition, showed that the contents changed most rapidly under the influence of the oxygen of the atmosphere as soon as ammonia was added to the, at first, decidedly acid liquor. Fortunately, a good supply of several ounces of dried leaves had been sent over, and from these I succeeded in obtaining Quinine, though in very small quantity, but presenting its usual characteristics, dissolving in acids and precipitated by alkalis as a whitish hydrate, soluble in ether, and left by this on evaporation as a resinous looking body, having the usual bitter taste, also crystallizing not only as a sulphate, but as an oxalate of Qui-

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nic acid in which it abounds having become oxidized so as to act the part of an acid, and is with difficulty separated. The chlorophyll has disappeared, kinovic acid is still present; gum, which contributed to the so called "resinous" character, and was abundant in the bark of the smaller branches, has undergone a decrease. But the most remarkable feature is the altered condition of the alkaloids themselves. Quinine, which formed a considerable portion of the whole, is now greatly diminished, chinchonine and chinchonidine remaining much the same. The total percentage has undergone no diminution, but rather the contrary, and an alkaloid, Quinine (?) † which was either entirely absent from the smaller quills or present in a feeble proportion, now appears in a notable quantity."

nine (the latter being the more critical test), but nevertheless presenting a characteristic implication with resinous or extractive matter, such as is usually met with in the very smallest quills or canutillos of South American bark, in analyzing which it is frequently difficult to purify the Quinine from this adhesion. I obtained first from these leaves to the extent of 0·11 of alkaloid, of which part was soluble in ether; the remainder in spirits of wine, and afterwards 0·19 of precipitate still more combined with astringent matter. From these data, it seems to follow that the leaves will not supply a material for the extraction of Quinine, but that they will, nevertheless, be very useful when used fresh or in recently prepared decoction or infusion for the cure of the fevers of the country. To this end the abundance of kinovic acid they contain, equal (weighed in the rough state) to 4·20 per cent., may also conduce.

I have not much to remark as to the No. 3 (bark renewed over spaces previously cut), as the quantity sent was too small for much chemical examination, but I obtained abundantly by heat the crimson sublimate which marks the presence of alkaloids, and the promise from the external characteristics was good. The No. 4 (bark covered up with moss for some months) seems to me a successful experiment of Mr. M'Ivor's, especially since I notice very abundantly in this bark the crystals of kinovate of Quinine which I have described* as I found them in the "red bark" of South America, and now find again, quite as plentifully, in the older bark sent from India. I may add that, generally speaking, the structure of the barks as shown by the microscope makes it evident that the plants had grown vigorously and under circumstances favorable to their full development.

I reserve any opinion as to the best method of drying the bark, to which Mr. M'Ivor alludes, till I have had the opportunity of examining further specimens.

I have the honor to be, Sir,

Your obedient servant,

John Eliot Howard.

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* Also Aricine (?); or perhaps the Quinio (?) of Batka. Central-blatt, 1859 No. 53.

No. 15.—*An account of the Outbreak of Cholera in the Jail of Chingleput during the Month of March* 1863. By J. SHORTT, M.D., Zillah Surgeon, Chingleput.

THE Jail at Chingleput is considered to be one of the best ventilated Jails in the Presidency. The night cells are contained in two buildings, the larger of these forms a quadrangle and is made up of ten separate cells or rooms; adjoining it is the smaller building which forms a parallelogram, three sides contain five cells each, whilst the northern side is formed by a dead wall twenty feet in height. The roofs of both these buildings are pent and covered with tiles; and both are encircled by a verandah and have an open court yard in the centre.

In one corner of the cooking sheds is a terraced three storied building known as the "*Rhai Mahal,*" its walls being three or four feet thick tend very much to diminish the area of the rooms. The lower or basement story was thrown into one room, and made as strong as it possibly could be for transportation prisoners and other bad characters, in the year 1857.

Chingleput Jail was the head-quarters for transportation prisoners, from every part of the Madras Presidency, who were located here until arrangements were effected for their embarkation; this routine continued until 1858, after which all such prisoners were ordered to be sent to Madras direct from out stations. The second story of the terraced building has four cells and the third only one.

Seven of the ten cells in the larger quadrangle had been under repair for twelve months previous to, and were even so, at the time of the out-break of cholera, in consequence of which seventy one prisoners were accommodated in the three available cells, although this was 34 in excess of the regulated number; the remainder were distributed through the other two buildings and Hospital. According to the regulated amount of air allowed to each man, viz., 500 cubic feet, the large quadrangle would contain 116, the parallelogram 61, and the Rhai Mahal 41 prisoners. The cells in all these buildings vary in dimensions, not one possessing cells uniform in size.

In the month of March each building contained as follows:

The three cells in the quadrangle.....	71
The parallelogram	148
Rhai Mahal.....	124
	343
In Hospital.....	39
	382

The total number being 164 above what is allowed with regard to space, and owing to the difference in the size of the cells in the same building the space could not even be equally divided among the prisoners.

Such were the conditions and accommodations of the Jail. We shall next look to that of the hospital.—This is a rather capacious building, divided into three wards; at the time of the outbreak, owing to the crowded state of the Jail, one of the wards was taken up to shut prisoners in at night, another contained an insane patient, and the third, the other patients. Each ward will accommodate about 20* patients; but owing to the one ward being occupied by prisoners, and the other by the insane patient, the third, although it already contained 17† patients, was the one into which the cholera patient was admitted, being the only available place.

We will next turn our attention to the state of the weather, not because I believe it had or has any thing to do with outbreaks of cholera, but because Medical men sometimes entertained that opinion.

Meteorological Observations.

The weather had continued hot and dry for some time, and on the 20th March a heavy shower of rain fell and the long shore wind at this period blew more violently than usual; at about this time the greater part of the day used to be very sultry, not a breath of air would be stirring and this

* According to the regulated space of 500 cubic feet to each patient, Ward No. 1 will commodate 22½, ward No. 2, 16¾, and war d No. 3, 17 patients.

† This number includes 10 itch cases.

generally caused a feeling of great oppression. The mornings and evenings however were very pleasant, as a mild breeze blew from the south during the early part of the day, and the usual sea breeze in the afternoon. There were no thunder storms or other electrical conditions of the air apparent; the average range of the thermometer was 95° Faht. When cholera made its appearance in the Jail, the town and adjacent villages, for at least 30 miles round, had been free from this disease for some time previously.

Introduction of the Disease.

On the 20th of March a trial prisoner was brought to the Jail from the taluq of Ponari where cholera was prevalent, his route lay though Madras and a village called *Vanien Chuthrum*, at both these places cholera had been, or was then prevalent.

The prisoner was three days in reaching Chingleput and had slept at Ponari, Madras and Vanien Chuthrum on his way hither. After his arrival here, he was inspected, first by the Dresser and then by myself, to see that he was free from contagious or other disease. The man, to all appearance, was in the enjoyment of good health. At 11 A. M. of the 23rd he was brought to hospital with symptoms of cholera, viz., vomiting and purging. On admission his pulse was scarcely perceptible, voice reduced to a whisper, skin cold and clammy, eyes sunk, restless:—stated that he was purged early this morning which he did not notice till he became weak; he had vomited twice before he came into hospital. Believes that he passed his urine in the morning.

The patient was soon after seized with violent cramps, he became cold and pulseless towards night and continued very low, but towards the morning of the 24th he began to rally, and from that time he began to amend rapidly. He was convalescent on the 25th and sent out of Hospital on the 26th March. The same day two patients in hospital, one under treatment for paralysis of the lower extremities and the other for psora, were seized with the disease and both died, the one with paralysis on the morning of the 28th, the other on the morning of the 27th of March. The disease next shewed itself in the most crowded and ill ventilated part of the Jail, that is, the basement story of the Rhai Mahal, from here the disease passed

on to the cell, on the western side of the second story, in these two cells the largest number of cases occurred.

List of Admissions of Cholera Patients in the Jail Hospital, Chingleput, in 1863.

Number of admission.	Admitted.	Discharged.	Died.	Days under treatment.	Remarks.
	1863.	1863.	1863.		
1	23rd March.	26th March.	.....	3	
2	26th „	.....	28th March.	2	
3	26th „	.....	26th „	1	
4	27th „	3rd April.	.....	7	
5	27th „	3rd „	.....	7	
6	28th „	.....	30th March.	2	
7	28th „	.....	29th „	1	
8	29th „	....	29th „	12h.	
9	29th „	9th April.	....	11	
10	29th „	....	30th March.	1	
11	30th „	....	30th „	12h.	
12	30th „	.....	30th „	9h.	
13	30th „	11th April.	.....	12	
14	30th „	17th „	....	18	
15	30th „	3rd „	.....	4	
16	31st „	3rd „	.....	3	
17	31st „	30th „	.....	30	
18	31st „	3rd „	.....	3	
19	31st „	6th „	.....	6	
20	31st „	6th „	....	6	
21	1st April.	6th „	.....	5	
22	5th „	....	7th April.	2	
23	7th „	13th April.	....	6	
24	11th „	17th „	.....	6	
25	11th „	.....	11th April.	8h.	

Between the 23rd of March and the 11th of April there were twenty five admissions with ten deaths, and contrary to what I have experienced on previous occasions, I found that among the last admissions were some of the most severe cases, the last patient succumbing within eight hours

the evacuations being serum tinged with blood containing the usual floculi floating in it.

Precautions taken on the appearance of the disease.

As soon as the second case shewed itself in the Hospital the sick were removed to the Dispensary, no prisoners were brought to the Hospital to be locked up at night, the whole of the Jail buildings were whitewashed and the doors and windows painted with a coat of tar, damp straw was spread on the floor of the cells and burned, and on the ash being swept out, a saturated solution of chloride of lime was sprinkled on the floorings and the cells were fumigated with Benjamin.

Some of the prisoners were removed from the crowded cells and allowed to sleep in the open verandahs at nights. At this time new rice was in use, of which the prisoners complained, because in many instances bowel derangement was occasioned by it. On my representation great exertions were made by the Jail officials to procure old, and substitute it for the new, rice, and the whole of the prisoners were put on a meat diet three times a week.

The greatest attention was paid to cleanliness, all soiled clothes and bedding were immediately burned, the excreta from the stomach and bowels were received into vessels containing a saturated solution of lime and immediately buried in pits made for the purpose, first covered with earth, then with a layer of charcoal and lime, and these were, last of all, well covered over with earth.

The flooring tiles were daily washed with lime, large open baskets of charcoal were placed in each of the corners of the wards, and last, though not the least, it was found necessary to bury the dead very quietly at night by coolies employed for the purpose, as great alarm was occasioned by the dead bodies being carried out; on one occasion four able bodied men were carried out dead on the same day, and this seemed to stike terror even into the Hospital attendants. The progress of the disease was kept as secret as possible from the body of the prisoners. I went among them night and morning endeavouring to cheer their spirits and tried to make light of the matter, whilst at the same time I carefully scrutinized each individual prisoner.

Whilst all this was being done arrangements were made and some steps taken to shift the prisoners out ; but I feel

thankful to say that the several precautions already described, and carried out under my personal supervision, had succeeded in arresting the extension of the disease, it was therefore found unnecessary to carry out the projected movement, which, had it taken place, would have been attended with considerable expense, and much inconvenience.

Admission of the disease into the Jail.

My mind is quite clear on the subject that the disease was brought into the Jail by the trial prisoner admitted there on the 20th, and who took ill of the disease on the 23rd. Having carefully studied the subject and watched the progress of the disease during various epidemic outbreaks that have passed through this district for some years past, and from recorded cases of my own and those of my predecessors, I am confirmed in the opinion that the disease has been and can be introduced into our Jails or other public Institutions by new comers, who although they may have had the disease about them at the time, defy detection whilst it is in the stage of incubation. I further believe that a person subjected to the influence of cholera may take the disease at once if predisposed to it by any depressing or other agencies ; or even when in perfect health and strength, if he be for any continued period within a short distance of the focus of its generation, where the atmosphere must necessarily be largely contaminated with the poison. Or he may even carry it about, or within, his system in a very diluted or rarified condition for several days, until some favorable opportunity arises for its further development. Fatigue of mind or body, or even temporary exhaustion is sufficient for this, but should this necessary pabulum be withheld for about a week the seeds of the disease die out.

The case of the prisoner alluded to very forcibly leads to these conclusions—here was a man brought into a place at the time in all probability free from cholera contamination, and he himself to all appearances in perfect health ; but then he had passed through, and slept at, places where cholera was prevalent. In some one of these places he must have imbibed its influence, and had his journey been prolonged, the excitement and change of atmosphere, with other circumstances attendant, would most likely have enabled him to overcome the contagion. But a reverse of these circumstances ensued, his journey and attendant changes come to an end whilst the seeds of the disease were in him, he was con-

signed to a prison, and there depressed and jaded breathed an atmosphere impure comparatively. All the circumstances of his unfortunate position crowd in upon his memory, and so lower his constitution as to favour the action of the poison, he his therefore attacked, but the attack was one which was amenable to treatment, though the fluids, &c., from him, despite all the precautions taken, generated a focus which for a while spread destruction around it.

Besides this there are recorded evidences in support of this view of the introduction of the disease into Jails, &c. Dr. Ratton states in his Annual Report dated 1st January 1856, "I am happy to be able to state that no epidemic has occurred among the prisoners. For though two cases under the head Epidemic Cholera occurred together in the month of January, yet they were rather sporadic cases, no cholera being in the neighbourhood at the time. They were newly admitted prisoners, only having been *four days in Jail;* both came together from the same village, twelve miles off, and must have brought the seeds of the disease in their constitutions."

In the Annual Report 1858, I made the following observations. "Cholera, as already noticed, prevailed in the town on two occasions, but did not affect the prisoners epidemically on these occasions. When cholera did appear in the town it was clearly traced to importation. On the first occasion a detachment of the 25th Regiment N. I., on its march from Trichinopoly to Madras suffering from this disease encamped at Nuthum, an adjacent village, on the 14th September, and on the 18th this disease made its appearance at the above village and continued its ravages up to the 12th October. No report was furnished, but it was rumoured that sixty three individuals were attacked, and of that number 50 died."

"In December the B Troop Horse Artillery, on its way from Trichinopoly to Madras, was attacked with this disease, and on the 11th they encamped on the Southern side of the Palar river (three miles distant from here), and on the 13th marched through the Station. On the 22nd of December a detachment of the 1st Native Veteran Battalion with cholera arrived here, and on the same day this disease made its appearance and continued to prevail up to the end of the year. The only European pensioner residing here fell

a victim to it. Only four cases of cholera occurred among the prisoners during the year, two of these appeared to be sporadic, the first on the 5th April prior to my assuming charge, and the second on the 5th of June, both recovered. The other two cases occurred to transportation prisoners some time after who had arrived a day before from Chittoor, and these had evidently taken the disease on the road up here, one recovered and the other died. I instituted inquiries and ascertained that cholera was prevalent in and about the village of Chittoor when the prisoners started from thence."

The reason why the disease did not spread *then*, will at once become apparent, but in March last the Jail was so crowded that the prisoners had scarcely a general average of about 275 cubic space of air each. This did not so much matter in the two Jail buildings, which were open and airy, but in the Rhai Mahal the area is so crowded in with thick walls formed into low squares with lancet shaped arches, the greatest span of which is five feet, while some are only three and half feet, so that there is scarcely an average, to all, of five feet.

These rooms were generally used for civil debtors and women of whom there are always a small number on the list. The basement story is shut in on the north; on the east, and west sides, there are four windows, two on each; and on the south there are three barred doors: these are the only sources of ventilation; and, to render matters worse, the building is near to a 6 feet dead wall which is on the east side, so that it is much shut in.

When we consider the state of the next cell or that in which the disease shewed itself in the greatest numbers, we cannot be surprised at such an occurrence, although it is raised being on the second story, it is completely shut in on the north and south, the only openings are to be found on the east and west, the former does not communicate directly, but through the medium of other rooms, with the open air. Under these conditions, I say again that it cannot be wondered at that the disease should have shewn itself as it did among the prisoners, when so crowded together in these places inhaling not only the odor of their own excreta, but that of others also for twelve full hours, together in a temperature of from 100 to 120.

Contagiousness of the Disease.

This question has been long decided, I believe, by some of our most able Medical men. In the same ward with the first cholera patient who was admitted, were other patients, the three nearest to him took the disease. It may as well be stated here that one of these was a case of Paraplegia for which the patient had been and was taking at the time Opium, Quinine, Belladonna, and ergot of rye pills thrice daily. The Orderly and Hospital cook, who attended to the patients and the dhoby who washed some of the soiled linen which had escaped my notice (as all foul clothing was daily destroyed in my presence by fire) and one of the men who carried a cholera patient to his grave were among those who were attacked.

That overcrowding is a prolific source not only of epidemic but of zymotic and other diseases is unmistakeable, and has been but too well illustrated in this Jail during the last few years. This Jail, which has hitherto been reputed for its healthiness, is now fast losing that character and becoming extremely unhealthy from no other cause than that of overcrowding.

Whilst the Jail can only contain 218, the follow statement of strength and mortality during the last few years will shew that there has been excess of 164 prisoners, over the regulated complement during the last year.

Years.	Strength.	Deaths.	
1857—58	285	2	
1858—59	300	7	1 out of the 7 died out of Hospital without receiving treatment.
1859—60	292½	13	
1860—61	294¾	17	
1861—62	347	10	2 out of the 10 died out of Hospital without treatment.
1862—63	414¾	34	4 out of the 34 died out of Hospital without receiving treatment.
1863 from 1st May to 16th Octr.	326	16	

Premonitory Symptoms.

In the course of some twenty five years experience, I have probably seen as many as a thousand cases of cholera, if not more, both among Europeans and Natives, women, and children, and of all creeds and castes. From the results of this amount of experience, I cannot believe in what is termed a premonitory stage of diarrhœa; if diarrhœa is present at all, it is the manifestation of the disease, in other words it is a symptom of cholera. I do not deny however that persons suffer sometimes from Diarrhœa properly so called during an outbreak of cholera, but then it is a distinct disease brought on for the most part by fear or sudden panics during cholera epidemics—the fear probably suddenly arresting the functions of the nerves of organic life paralyses as it were, the muscular fibres of the intestines and cause an outpouring of their contents. And I admit that patients suffering from diarrhœa frequently take cholera, their system then being favourable to the reception of the *morbi materies* of cholera itself.

A good deal of stress is laid on the use of purgatives, but they have the effect of weakening the system and thus favouring the reception of the poison. I do not think it is a good plan to use saline purgatives at all during the prevalence of cholera epidemics, because the individual may actually be suffering from cholera, but attributing the motions to the action of the purgative, medical aid is not sought for until it is too late. Several such instances have come under my own observation.

Again,—stress is laid on the nature of the evacuations, and the question suggests itself as to what becomes of all the "fœcal matter," which the intestines naturally must contain at the time of seizure? In the majority of cases patients are not seen till after they have had a motion or two, and after this the stools are no doubt either conjee-like or serous. The first motion or two are frequently so copious that I have seen one evacuation alone sufficient to wash out the intestines completely, the first motion frequently exceeds a gallon in quantity. I have seen many patients both Europeans and Natives in whom the first indication was a sensation of heat and uneasiness in the chest, and the patient drops down, as if shot through the heart, by a single evacuation, followed instantly by the usual algid symptoms so characteristic of this disease.

Pathology of the Disease.

Whatever may be the immediate cause of the disease we know not, but that the morbid poison first shews itself in the blood there can be no doubt, for the blood of the whole system is drawn to the two principal cavities of the trunk, namely, the chest and abdomen, and from these it is as it were squeezed out as from a soaked sponge, the watery portions being poured out into the stomach and bowels in the form of serum which is the watery constituent of blood. Further, we know that the blood is drawn to these principal cavities from the absence of heat and arrest of the circulation in the extremities.

The great heat the patient experiences in the chest and abdomen while his skin is icy cold renders him extremely restless, and the blood being drained of its fluid constituent, creates that craving and never ending thirst for fluids. If a vein be now opened the blood does not flow, if it be squeezed along its main trunk a drop or two of black blood of a tarry appearance and consistence is thrown out, the same appearance of the blood is observed when a *post mortem* examination is made; indeed so far this appearance of the blood is characteristic of the disease.

The absorption of the watery constituents of the blood from the body causes the shrinking and lividity of the skin of the extremities, much more apparent in the European than the Native; the pinching of the countenance is also from the same cause as is also the suppression of the bile and urine. The absorbents fail to act, and the stomach and intestinal canal have their normal functions arrested, whatever medicine or fluid is thrown into them remains inert or is rejected. The diminishing of the circulation is evident when the patient is carefully watched, the respiration becomes impeded and prostration follows, with coldness, &c., till complete arrest of the circulation occurs, and the patient dies in a measure asphyxiated.

With reference to the outbreak of cholera in the Jail I have already pointed out how the disease was introduced there. I find some authorities laying much stress on the absence or presence of the disease in the Town; but in this instance it will be noticed that the Town and its vicinity were singularly free from the disease when it was prevalent in the Jail. I have noticed on six different occasions that while the disease prevailed in the Town to some extent, not

a single case occurred in the Jail—in fact since joining my civil appointment in June 1857 cholera never occurred in the Jail epidemically, though almost every year one or two sporadic cases were treated ; in these instances the disease was generally introduced by new comers, as noticed before.

When absent on sick leave during the months of June and July 1860, the disease seems to have prevailed at the same time in the Town and Jail. Dr. Farquhar who was then in charge records fourteen cases with five deaths, and "believes the prisoners took the disease from the Town people as the same causes may have been prevalent in both places." He further states, "besides which it was necessary for the prisoners to pass through the village in going to and from their work." Dr. Bidie, in an able article on the Etiology of the Disease, which appeared in the 1st vol., Part I., page 25 of this Journal, clearly shews how the disease follows in its progress the stream of human intercourse, and in Part IV. of the same article he discusses the time and stage of incubation. My own experience enables me to fix this stage at from one to seven days. I can quote several instances in point of fact to support the above. The instance of an officer holding a high position in the Presidency, who having been subject to cholera influence at Bangalore, died a week after on his arrival in Madras may still be remembered by some of my readers. In Part V. Dr. Bidie describes the fact of the healthy suffering when admitted from without into a circumscribed locality such as a prison, this is just what occurred in the last outbreak in the Jail here, and also in that which took place in June 1860, after the disease was admitted into the place the patients in Hospital seem to have been the first to take it. In the last outbreak a case of well marked varioloid form of small pox did not escape the disease. The patient was admitted in the eruptive stage and took cholera the next day; he made a tedious recovery.

It is an old saying that "prevention is better than cure." Taking the above remarks into consideration, I think this adage is remarkably applicable to the future, and it behoves those in charge of Jails to pay particular attention to new comers, I would suggest that they be kept for a week at least in a separate building apart from the other prisoners, that their clothes be immediately washed, that they be well fed and have a small share of stimulants given them, and above all that their excreta for this period be received into vessels con-

taining chloride of lime, and immediately buried when the presence of cholera is suspected. This will be caring for the individual and preserving the mass, and further, it behoves them when they hear of cholera in the Town or its vicinity to prevent, if possible, all intercourse between infected villages, towns or jails, and those free from the disease, a *cordon sanitaire* should be established to ensure that there is no communication either directly or indirectly between the infected places and the jail.

And it behoves Government to establish a similar *cordon* around every infected village, and which should be rigidly enforced to cut off all communication between the healthy and cholera villages, thus the limits of the disease will be circumscribed and the disease soon cut short and any expense the Government may be put to will be amply repaid by the number of lives that will be saved.

Treatment.

On this point I have not much to say; I have not only seen tried but have myself tried, almost every variety of treatment. As a rule at the onset of the epidemic every kind of treatment fails, but on the decline of the disease any treatment is successful, and thus it happens that we hear of the large numbers of cures reported to have resulted from some vaunted remedy or would-be specific. Remedies which succeed in one epidemic completely fail in another, and the same may be said of individual cases, what cures in one case seems to have no effect in another.

I have no faith in specifics considering that a large number of almost hopeless cases recover from a diversity of remedies as well as from no treatment at all, except good nursing, and sometimes even from plain cold water given ad libitum, after all perhaps some simple fluid of a similar harmless nature is the best; for it helps to dilute the blood by supplying fluid to the system which has been drained of it.

In my juvenile days I remember the first and most severe case of cholera that occurred in H. M. 25th Regiment at Arnee many years ago was cured by beer. The Medical Officers of the Regiment were new to the country and to the disease, and it happened that the late Superintending Surgeon D. S. Young, Esq., of the Division was at the station on a tour of inspection. The patient being in that cold hopeless state in which cholera patients are frequently found

craved for some ginger beer, Dr. Young was consulted and he recommended Bass' beer with some ginger powder in it, and the patient took some eight or ten bottles of beer in one night and made a thorough recovery ; the same remedy tried in other cases failed completely. My own practise is to put faith in no one remedy, but to watch patients closely and take advantage of circumstances and treat the symptoms as they arise, or in other words the treatment is expectant.

Unfortunately in an epidemic the medical man cannot give such close attention to every individual case and he has frequently to depend on collateral assistance.

I have recently perused the records of three cases of cholera that were treated in 1824 nearly forty years ago as recorded in an old journal in my possession. These cases are interesting, for they not only prove the identity of the disease, but also shew the treatment practised in those days, and that we have not done much to improve it after forty years experience.

No. 16.—*On the prophylactic properties of Salt as preventive of Cholera.* By F. C. Brown.

[From Government Records.]

TO THE REVENUE SECRETARY, GOVT. FORT ST. GEORGE.

Sir,—1. The Supreme Government of India has lately directed general attention to the remarkable efficacy of salt as a complete defence against the Asiatic Cholera, by publishing the official reports made of its successful trial upon a large body of men by Captain Wood, Political Agent in Nimar. Captain Wood states (7th May 1857, 13th March 1863,) that "the Cholera having raged greatly in the year "1857 in the City and District of Hoshungabad, and especi-"ally with great virulence in the vicinity of the Jail" under his official charge, he gave, by the advice of Dr. Beaman of Madras, the Civil Surgeon, to every one of the numerous prisoners and at every meal "an extra quantity of pounded table salt," over and above the Government allowance. "The "result was that not a single prisoner was attacked with "Cholera, though several persons died from the epidemic near "the Jail, and many casualties took place in the 'Regimental "Lines.'" During the severe outbreak of Cholera in Bengal in 1855 and 1856, its attacks were so fatal in the Central

Prison at Agra, that it became necessary to empty the Jail of the whole of the prisoners, and to march them about the country to the number of 717 for a period of two months, before they were freed from the pestilence.

2. The quantity of salt given by Captain Wood, was about a Rupee's weight a day. He writes, "This prescribed "quantity taken as long as the Cholera hangs about, renders "the person, humanly speaking, proof against an attack." He adds with judicious discrimination "Salt is *certain* in its action as *a preventive* of Cholera, *uncertain* as a cure."

3. Dr. Beaman, now Civil Surgeon at Tellicherry, has followed Captain Wood by a letter from himself to the "Madras Times," in which he states that "being in medical "charge of the large Jail at Hoshungabad in 1857, he was "able to test upon a large scale, with Captain Wood's valu- "able co-operation, the use of salt in Cholera" with the entire success related by that officer.

4. But Dr. Beaman seizes the occasion to invite the attention of every person in India to the following discovery, which he sought to make universally known six years ago through the Press of the three Presidencies, viz., that "so "far back as the year 1834, about the time of the first visit of "the Cholera to England, his father Dr. Beaman, senior, a "London Physician of more than forty years' practice, pro- "nounced common table salt to be an all but infallible Cho- "lera preventive. The late Mr. Wakley of the "Lancet," "warmly advocated Dr. Beaman's doctrine, and earnestly "impressed it, as Coroner for Middlesex, on the attention "of the Government." In 1849, when the Cholera deaths in London rose to 1,800 and even 2,000 a day, Dr. Beaman gave through the "Times" the widest possible publicity to his antidote. "In no instance, where the salt was taken, was "the party stricken with the disease, and his theory has been "*for many years* largely carried into practice in England." So testifies Dr. Beaman, junior, who returned this year from a visit to his father; and who himself bears witness to the fact, that salt proved in India as complete a preventive of Cholera among a large body of Natives collected together, and habitually marked by its fatal attacks, as salt has proved to be in England in every instance which has come under the observation of his experienced and respected father in the course of a trial of thirty years.

5. It is now more than forty years ago since peculiar local

circumstances brought under my habitual notice a considerable body of Natives of both sexes and of all ages, and that my attention was arrested by observing the singular immunity from Cholera which they enjoyed during the successive times that the general population was being ravaged by its attacks. As the Cholera is again ravaging this Presidency, I respectfully solicit the dispassionate attention of His Excellency the Governor in Council to the fruit of my long Indian and exceptional experience. I ask his unbiassed consideration of the facts I have gathered together in the course of the years of patient study which I have devoted in India and in England, to tracing up to its real cause the generation of the Asiatic Cholera.

6. For it must never be forgotten, in every investigation relative to the Asiatic Cholera, that British India stands out evilly prominent and conspicuous as the sole exception to every other country in the world, which the plague has successively travelled to, and in turn decimated. In all those countries, however deadly the Cholera may have been on its first importation, its virulence has gradually abated and worn itself out: in all of them, whether continent or island, it has disappeared wholly until it has been imported afresh to their shores in the course of the active commercial and social relations which, at the present day, encircle the earth. In India, the Cholera never dies. In India it has never ceased its ravages for an hour, from the time it first broke out in Jessore in the year 1817, forty-six years ago, down to the hour that is passing; witness the thousands of the population lately swept off in the town of Madras itself; witness what is reported from Nuggur in Mysore that "in the vil-"lages one, two, or three corpses are left to rot in each hut, "the inmates having fled away in terror, while the tappal "runners refuse to pass through;" witness the sitting of Committee after Committee in Bengal, all fruitless of remedy down to the latest at Cawnpore in 1862; witness the fortnightly return required from every village in the country, showing whether the Cholera prevails in it or not.

7. There is a further circumstance which distinguishes the numerous population of India, in a marked manner from the population of every other country; that is, that it is almost wholly a vegetable-feeding population. Not only do the higher castes of Hindoos restrict themselves to a vegetable diet, but their example is followed by all persons

and families of inferior caste, who desire to attain to social respect and distinction. In Sudra households that can afford the expense, a Bramin is the family cook. He, it is known, touches nothing that has had life: hence, he is a standing witness and a daily voucher of the family purity and respectability. On great festivals and annual commemorations, when food is largely distributed to guests invited and uninvited, and when, according to Eastern manners, it is a point of honor with the entertainer that they should be attracted in large numbers from every quarter, and of every caste, Bramins are the only cooks employed. Hence, both religiously and socially the observance of a vegetable diet is universally held in honor and respect by the Natives, not excepting those among the Pariahs, who, when they have acquired wealth, are the first to take this mode of showing it, and of approaching as near as they outwardly can to the Bramin. In India, therefore, two remarkable things every where meet the eye, and challenge enquiry, namely, a vegetable feeding population, and among them, the ceaseless, spontaneous generation of the Asiatic Cholera.

8. I came to reside permanently in Malabar in the year 1822. My father was then living and residing on this property, where he habitually employed about 400 day laborers. In crop time they rose to between 5 and 600. Of the first number, about 300 persons belonged to two of the servile agricultural castes common to the Western coast. As these castes are not suffered to approach or to dwell near the castes that are free, they and their families were located by themselves on the property, in a village apart and away from all other houses, but sufficiently near to the house of Mr. Brown as to ensure to them necessary protection, and bring them under his constant observation.

9. In Malabar (as in the North of England and in Scotland) it is the honest, as well as the just, humane and immemorial rule, to pay all day laborers their wages, more than three parts in paddy, less than one part in money. Women and children are paid the whole in paddy. The laborer is thus secure of a full ration of the standard food of the country in return for his day's toil and sweat. He is not made the helpless and heartless victim of each season's vicissitude; nor of grain forestallers and regrators, nor of the periodical fluctuations in the value of the Rupee and the Pice, when coin must be got to pay the Collector's kists. In this manner were

all Mr. Brown's laborers, free and servile, paid. But the servile, not being allowed to frequent the Bazaars of the country, received, old and young, besides food, clothing, fuel and lodging, a daily quantity of salt, oil, jagree and betel, the necessaries coming next after the four principal ones in the order of their daily wants.

10. The salt was issued without stint. No person who has not closely observed Native life can be aware, how frightfully and universally worms are prevalent amongst the people, nor how fatal the disorder is among young children, in consequence of the quantity of raw vegetable trash they are allowed to devour. Well aware of this great mortality and of its cause, and knowing that salt was the best of anthelminthics, Mr. Brown required not only the parents should take sufficient salt for themselves and their children, but he insisted that the parents should mix the salt daily in their children's food. Evidence of its good effects soon secured the parent's obedience to the injunction, and this cause of infant mortality was arrested. It was this humane purpose, the prevention and extirpation of worms, which had led for many years to the regular issue to the two castes of a large and liberal supply of salt.

11. I succeeded Mr. Brown at his decease in 1828. Ten years before, in 1818, the Cholera paid its first visit to North Malabar. It entered from the north in its regular progress to the south, spread rapidly through the country, filled it with death and desolation, and here as every where else, prostrated the population by the unutterable terror which its sudden and irresistable attacks beget. From that time to the present, its visits have continued, not exactly yearly, or constant, but intermittent; returning so suddenly and inexplicably as to lead to the belief that the poison is always being slowly and habitually generated, and manifests itself like an explosive gas, when the explosive quantity has accumulated, and poisoned the surrounding atmosphere. Once generated and actively evolved, it is propagated, by the same subtle agencies which diffuse abroad the invisible and untraceable miasms of the plague, the small pox of typhus, and all epidemics, in the manner witnessed in all countries.

12. Throughout every part and in every class were the successive visits of the Cholera more or less fatal, one only excepted, our villagers of the servile castes. Not one fatal case occurred amongst them: the few attacked recovered *in a few*

hours under the administration of the stimulant remedy kept ready at hand for the use of all applicants.

13. This singular immunity excited my surprise, and naturally fixed my attention. I gave to it patient, careful and sedulous examination. The means and the opportunity of observing it were as complete and inviting as they were peculiar. The objects were constantly before my eyes in their daily lives. From the year 1799, the year of their arrival and settlement on the property, an accurate record of their births and deaths had been kept, in order to mark their relative increase or decrease. The free castes were also so habitually before me, as to attract attention to them by the contrast of their mortality with the freedom shown by the servile castes. I diligently and concurrently noted both in every thing relating to their ordinary mode of life: their habitual food, their clothing and lodging, their inner life and out-door work and exposure. In no one particular, except in the one of having a regular and sufficient supply of salt could I find that the food or mode of living of the servile castes differed in any appreciable manner from those of the free laborers, with whom they daily came in contact, and worked in common. Except from Cholera, from no other disorder common to both and to the country, did the servile castes show an immunity. My observation at that time ceased only on my return to England in December 1837. During all those years, not one fatal case occurred among my villagers, at the time that the Cholera was making its usual ravages upon the population around. Hence, the conviction was tardily, and I may say, reluctantly, forced upon me, that if a sufficiency of salt made those persons "Cholera proof" to use Captain Wood's expressive words, so a deficiency of salt to correct and sanify the habitual vegetable food of the Natives, could be no other than the cause which generates in their bodies the poison of the Asiatic Cholera.

14. During all those years the Company's Salt Monopoly existed in full vigour. The Collectors drew a commission of 5 per cent. upon their "extra collections," among which salt yielded the largest sum. In Bengal, the numerous Salt Agents were allowed, as Sir C. Trevelyan states, a commission of no less than 10 per cent. upon the amount of their salt sales. Every attempt to draw attention to the Salt Monopoly was met by the stereotyped phrase, "the Company must have money."

15. That the continued effects of the Monopoly are not merely to stint the use of salt in the interior, but to put it beyond the reach of the great majority of the people, is attested by Major General Sir Arthur Cotton in his report on the Godavery of the 12th July 1859. Sir Arthur writes :—

"The present price of Salt in the interior, 4 or 500 miles "from the coast, is quite sufficient to prevent its use to any- "thing like the extent that health requires. It is, indeed, a "grievous thing to see a necessary of life, which God has so "abundantly provided, so that in many places it is literally "like sand on the sea shore (being produced spontaneously) "placed by means of the two items, of an enormous duty "and as enormous a cost of carriage, beyond the reach of "the great majority of the people in the interior. The "salt that can be got for nothing or for a Rupee or two per "ton on the coast, I found selling in the interior at 1 Anna "a pound, fifteen times the price in England ; and allowing "for the difference in the value of money there, about 1,120 "times as dear as in England. All the way up the river "the first question continually put to us by the people on "the banks was, 'will you bring us salt?' A person "can hardly conceive the eagerness with which the poor "people enquired for it, and bought it when it was sold "from the steamer a little below the usual price. If the pre- "sent excessively severe duty is still to be levied, we can "still reduce the price in the middle of the country to less "than one third of the present cost, and this alone will be "an incalculable boon to the people. Even in wealthy Eng- "land, it was decided that essential as salt was to health, it "was bad economy to lay any duty at all upon it. How "much more is it incumbent on our Government to do what "can be done to reduce its cost in this poor country, where "the people live entirely on vegetable food?"

"It is well ascertained that, where the price of salt is "sufficiently low, the consumption is very great among a "people living on grain." Sir Arthur estimates at 15 lbs. a head, or 100,000 tons a year, the natural demand for salt of the fifteen millions of people whom the Godavery would supply. In the Mauritius, it is a frequent complaint among the coolies that half an ounce of salt a day is insufficient to season their food, which is no doubt more of an animal kind there than it is in India. The issue of this allowance to them, as part of their legal rations, is a proof that the In-

dian Government consider about 12 lbs. of salt a head as the minimum quantity on which a Native taken to the island can preserve his health. The salt statistics of India are no where accessible in a shape to show how far the general consumption of the country exceeds or falls short of the Mauritius minimum. But Mungo Park bears affecting testimony to the feeling engendered by a privation of salt. "In the interior (of Africa) the greatest of "all luxuries is salt. It would appear strange to a Eu-"ropean to see a child suck a piece of rock-salt as if "it were sugar. This, however, I have frequently seen, al-"though in the inland parts the poorer classes are so very "rarely indulged with this precious article, that to say, 'a "man eats salt with his victuals' is the same thing as saying, "'he is a rich man.' I myself have suffered great inconve-"nience from a scarcity of this article. The long use of "vegetable food creates so painful a longing for salt, that no "words can sufficiently describe it."—Travels, Vol. 1, page 417.

16. In 1847, the year after the establishment of free trade, I published a pamphlet in London on the Indian Cotton question. In showing how injurious the Salt Monopoly is to every branch of Indian agriculture and production, I also briefly showed how, according to my conviction, the Monopoly was likewise the parent of the Asiatic Cholera. My friend, Mr. Wakley, struck with the corroboration which my facts and reasoning gave to the *rationale* of the Cholera practice, introduced and advocated by his friend, Dr. Beaman, senior, at once communicated them to the latter, and brought me acquainted with this well known and respected Physician. Dr. Beaman gave me his paper published in the "Times," he copied the facts he found in my pamphlet, and declared to me in writing "that he does not entertain a doubt as to the salt "Monopoly being the parent of the Asiatic Cholera." Such, to this day, continues to be his steadfast conviction.

17. A flesh eating population derives from this food a portion of its necessary supply of salt. But where the food is only partly animal and the rest vegetable, there it is notorious as it is throughout Europe, that the quantity of salt thus obtained is quite insufficient for healthy nutrition, and is invariably increased by a quantity taken at every meal. Hence, the universal salt-cellar on every table in Europe, whether

of rich or poor: hence, the vigilant pains taken by parents to beget in their children an early taste for salt in their food whether the food be animal or vegetable.

Dr. Liebig teaches how necessary this domestic care is. His minute researches into the vital agents, and his instructive investigation of their action on the vital functions, furnish the striking and conclusive explanation, why a privation of salt, partial or total, among a vegetable-feeding population, if not at once fatal to life, must produce among them disease of an unusual and formidable character. He thus writes, (Chemistry of Food, page 110), "An animal living inland "obtains in the seeds, herbs, roots and tubers which it con- "sumes, only Salts of Potash, the chief organic constituent "*of its flesh*, but no Phosphate of Soda, *a compound never* "*absent from its blood.* And when, in inland countries, the "food does not contain common salt enough to produce the "Phosphate of Soda necessary for the formation of blood, "then more salt must be added to the food."—I append in separate form an instance of severe Scurvy breaking out for the want of Potash in the diet.

19. Dr. Liebig continues in another work (Letters on Chemistry, his physiological illustrations of the same subject) he says, "The quantity of common salt usually amounts *to* "*upwards of one-half* of the total weight of all the incom- "bustible substances in the blood of man and of animals. "The great proportion of common salt in the blood is suf- "ficiently remarkable to be considered, *with reference to the* "*question of its necessity, as a condition of the vital process.* "Salt serves in the organism to assist and promote the most "universal changes. *There is no fluid of the animal body* "*in which Chlorine* (derived from salt) *is absent as a con-* "*stituent.* Moreover, when we consider that the efficient "free acid, often occurring in digestion, is Hydrochloric Acid, "which is derived from common salt, all these facts, taken "together, seem entitled to be regarded as irrefragable proofs "of the necessity of the presence of salt for the vital process, "and of the addition of salt to the food of men and the fod- "der of animals." Another Physiologist, no less accurate than eminent, Dr. Prout, observes on the same subject: "Of "this important secretion of the stomach (chyme) *Chlorine* "is an ingredient, it would seem a necessary ingredient, for "the secretion in *its healthy state* always contains more or "less of chlorine, the powerful influence of which seems

" mainly to contribute towards effecting the combination of " the aliments with water. The source of this Chlorine, or " muriatic acid, must be the *common salt* which exists in the " blood."—*Stomach and Renal diseases, page* 455. *Appendix* 6.

20. An examination of the phenomena of Cholera, guided by the direct light thrown upon them by these profound investigations into the principles of health and nutrition, render possible only one conclusion. An attack of the disorder is thus accurately described by Dr. Snow, a London Physician: " Cholera commences with an effusion of fluid " into the alimentary canal, without any previous illness what- " ever, and the subsequent symptoms are the result of the " change in the blood, occasioned by this effusion of its watery " part. The analysis of the blood of Cholera patients, per- " formed by Drs. O'Shaughnessy, (in India), Garrod and " others in England, proved that its thick and tarry condition " was caused by the loss of a great part of its water, together " with a portion of its *saline constituents.*" In other words, the stomach being deficient of its necessary Chlorine, the combination of the vegetable aliments with water, in order to form healthy chyme, cannot be effected, and all the fluids of the body being tainted by the absence of Chlorine, the poison of cholera is generated and given out. The affinity of the water of the blood with the fibrin is destroyed, the water separates, and is poured by the absorbents into the alimentary and intestinal canals and is discharged almost continuously out of the body. The fibrin that is left stagnates in the arteries and veins; with the circulation, the animal heat departs, and is at once followed by hopeless collapse and insensibility. " In this state," adds Dr. Snow, " the gene- " ral symptoms could be removed for a time by the injection " of *a weak saline solution* into the veins."

21. That an infusion of salt and water introduced into the body, not through the veins, but in a partial manner simply through the pores of the skin restores the circulation and revives animation, was shown in a most striking case of Cholera treated in Syria by Sir Hugh Rose, the present Commander-in-Chief in India. The man attacked was speechless, senseless, pulseless and all but breathless. Sir Hugh and an Arab Surgeon immersed his legs " in salt and water as hot as " bearable," 11 or 12 minutes sufficed to cause the blood to "liquify and swell in the veins." An ankle vein being

opened, "the blood of the color of the darkest claret and "very thick began to run slowly, quickening and gaining as "it flowed, a more natural color. The patient spoke, and "asked for food. He ate, and said he felt well. His skin "became less adhesive, his dark color diminished, and slow "pulsation gradually returned."

22. Such was the immediate and marvellous operation of salt in subduing the poison of Cholera in the body of a patient, so hopelessly infected by it as to be at the point of death. What is the effect of salt upon the poison, after it has been generated in the human body, and has been given out in such quantity as to taint the surrounding atmosphere and prove mortal to those who breathe the deadly miasm. Mr. Herapath of Bristol, one of the first Chemists of his time, made the Cholera his study from its first appearance in that city, where it was very fatal. The persons who suffered most were those who washed the linen and clothes of Cholera patients and were exposed to come in contact with the excreta of the latter. In 1849, Mr. Herapath wrote as follows: "The principle of preventing infection from Cholera, by de-"stroying the miasm by *Chlorine,* is mine. I take pleasure "in adding that, from the most extensive personal experi-"ence amongst infected Districts, and from the information "received from others, *I have no doubt that effective fumi-"gation from Chlorine is a complete preservative against "Cholera.*" We thus see that the action of *Chlorine* within the human body is to prevent the generation of the Cholera poison; that its action without the body, when the poison has been generated and evolved is to seize upon and destroy it.

23. From these proofs and facts it results demonstrably,

(1.) That salt taken in sufficient quantity with the daily food, is at all times indispensable to the healthy vital functions of the human organism.

(2.) That where the food is vegetable, a greater quantity of salt is necessary to correct and assimilate this food, than when the food is animal.

(3.) That where this quantity of salt is either insufficient, or habitually altogether absent from the food, disease of an unusual type must be engendered.

(4.) That the population of India is a vegetable-feeding population of whom multitudes have been for a series of

years, and continue to be by the operation of the Salt Monopoly, wholly deprived of the quantity of salt indispensable to health.

(5.) That it was amongst this population the Asiatic Cholera was first generated and broke out; it is amongst them that the Cholera has never ceased to be generated and to rage.

(6.) That in the instances, where bodies of the Natives have taken sufficient salt internally with their daily food during virulent Cholera suchbodies have been shielded from attack and made "Cholera proof," as effectually in India, as numerous persons in England have been protected from Cholera, during the last thirty years, by the use of sufficient salt in their daily foods when Cholera prevailed around them.

(7.) That *Chlorine,* the active principle of salt internally, is also proved to be the powerful chemical agent, which completely destroys the poison of Cholera externally, when it has been generated and infected the surrounding air.

(8.) That it is from India that the earth has been constantly scourged with the Asiatic Cholera.

24. To these deductions, I will add one more corroboration taken out of India, viz., that on tracing the mortality of the Cholera in all the countries it has successively ravaged, whether in Europe or out, whether under the line or within the Polar Circle, it would be invariably found, that the attacks have been most fatal and most prolonged in those, in which there exists a Salt tax or a Salt Monopoly. (Appendix 10.)

25. After this narrative, few persons will dissent from the justice of the sentence which Dr. Liebig passes upon the Salt tax, at the close of his physiological and chemical researches into the vital necessity of salt for every vital process of human and animal life. He says, "of all taxes on the "continent (whence he writes) the Impost on salt is the most "odious, the most unnatural, and the most disgraceful to "human reason. We may here see that more wisdom is "displayed in the instinct of an ox or a sheep than in the "arrangements of a being who, strange to tell, often regards "himself as the image of HIM, who is the perfection of all "kindness and of all reason."—*Letters on Chemistry.*

26. I must be suffered not to mix up in this letter the

object of the origin of the Cholera with the subject of the revenue yielded by the Indian Salt Monopoly. Mr. Ballard the Collector, has recently asked my opinion upon the material modification and improvement he desires to introduce into the selling machinery of the Monopoly, so as that salt shall yield the same Government revenue, while accompanied by much relief to the consumer in the increased facility of obtaining this necessary. Nothing better can be suggested, as regards these ends, than the Collector's proposal. But there can be no thorough relief to the people as long as the tax exists in any shape nor any solid gain to the Exchequer. The financial evils of a Salt Monopoly, in prohibiting the creation of national wealth in an agricultural population, are as obvious in India at the present day as they were palpable in the kingdom of Naples thirty years ago, when Lord Palmerston gave the Neapolitan Minister a spirited lecture upon it. He said, "a Salt Monopoly is a very "objectionable way of raising a revenue, and *very injuri-* "*ous* to the interests of any Government, which so imper- "fectly understands the science of Political Economy."

27. There is a tax, correct in principle fiscally and morally which, if judiciously resorted to, would admit of a large and immediate reduction being made in the price of the Monopoly Salt, and ensure its ultimate abolition with sure prospective gain to the revenue. I ask leave to make this tax the subject of a separate letter. No man is more alive than myself to the necessity of maintaining the revenue of India to the full level of expenditure required to ameliorate the general condition of the people, and to meet the charge of defraying the great material wants of the country. In proof that this is no new solicitude on my part, I now make known for the first time the letters to and from Lord Canning and from Colonels Jameson and Balfour, showing the share I had in originating the Military Finance Commission, whose timely labors alone saved the country from imminent bankruptcy in 1859. On this ground I venture to prefer my present request.

28. Not to lengthen this letter inconveniently, I have put in the appendix the numerous proofs and authorities there are, direct and collateral, all establishing the truth of my proposition. To them I also solicit the attention of His Excellency in Council.

Anjarakandy, Tellicherry, } F. C. Brown.
July 27th, 1863. }

No. 17.—*Quarterly Report on the Mortality of Madras for the Months of July, August and September,* 1863. By W. R. Cornish, Secretary Principal Inspector General, Medical Department.

The Public health in Madras has been singularly good during the past three months. This season of the year is usually marked by a high mortality from diseases of an epidemic character, more especially cholera, but happily the latter has not prevailed at all in an epidemic form. In the whole quarter only fifteen casualties were attributed to this disease.

2. The experience of past years would lead us to surmise that the cessation of this most destructive pestilence is temporary rather than permanent. The defects in the sanitary arrangements of the classes who usually suffer the most, have undergone no material improvement. They inhabit the same localities and are surrounded by the same class of impurities as before, yet during the past few months cholera has shown no tendency to spread as an epidemic.

3. The health of the people has been favourably influenced by the seasonable weather of the past quarter. Rain has been of the full average quantity, and so equally distributed that vegetation has been more active than it generally is in these months. The atmosphere has been kept well in motion as is evident from a glance at the Tables illustrating the velocity and direction of the wind. Nothing tends more to develope epidemics of cholera in crowded communities than a close stifling atmosphere. The months of July, August and September are often marked by great stillness of the air, but this season they were comparatively breezy and cool.

4. The mortality for the three quarters of the year is appended for easy comparison.

	First Quarter.	*Second Quarter.*	*Third Quarter.*
Europeans.....	59	32	32
East Indians	83	83	66
Hindoos.....	3,203	2,349	2,039
Mahommedans.....	438	485	360
Total...	3,783	2,949	2,497

It will be noticed that in the Third quarter (which is usually the unhealthiest) the deaths were fewer than in the First and Second quarters respectively by 1,286, and 452, and that, comparing the mortality with the *mean* of corresponding quarters of eight previous years, (the only years of which we have any account of the deaths) there was a decrease of 434.

Although the Municipal Authorities have done a great deal in the past few months to improve the surface cleanliness of the town, the work already accomplished can scarcely be looked upon as having kept the town free from cholera. We had a similar immunity from the epidemic in a part of the year 1859 and the beginning of 1860. One year of partial immunity, followed by two or three of great prevalence, appears to be the normal state of things in the town of Madras. Pure air in streets and dwelling houses, and a plentiful supply of pure water, made available for the use of even the poorest inhabitants, would undoubtedly help very materially to reduce the death rate from zymotic diseases in this city, if it did not entirely put a stop to the unnecessary waste of life occasioned by cholera.

When these blessings can be brought home to all, and the impurities of the town can be swiftly borne out of reach, the accession of cholera epidemics will, it is hoped, be few and far between.

6. The small-pox mortality has been very low, only sixteen deaths occurred in the quarter.

7. The mortality reported under the head of "Fevers" remains much the same as in the two first quarters. The deaths from Dysentery and Diarrhœa have diminished sensibly.

The deaths from "All other diseases" are slightly in excess of the *mean* of corresponding periods. The explanation is probably to be found in the fact that, when epidemics are prevalent, many weakly persons succumb to them, who would otherwise have lived longer, and have died ultimately from purely natural causes.

In the absence of epidemic influences, the deaths of such persons, instead of being added to the mortality occasioned by pestilence, are recorded under the class to which they belong

Deaths in Madras Third Quarter of 1863.

	Europeans.		East Indians.		Hindoos.		Mahommedans.		Total.		General total of both sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Miasmatic Diseases.											
Small-pox...	0	0	0	1	4	9	1	1	5	11	16
Measles.	0	0	0	0	0	0	0	0	0	0	0
Fevers.....	1	1	4	2	227	242	22	22	254	267	521
Dysentery..	3	2	2	1	110	127	20	18	135	148	283
Diarrhœa....	2	0	3	2	91	87	3	13	99	102	201
Cholera.....	0	0	0	0	4	5	4	2	8	7	15
Total of Miasmatic Diseases...	6	3	9	6	436	470	50	56	501	535	1036
Total of all other Diseases.....	14	9	26	25	627	506	134	120	801	660	1461
	20	12	35	31	1063	976	184	176	1302	1195	2497
Mean mortality of eight Third quarters from 1855 *to* 1862.											
Miasmatic diseases....	13·5	4·9	16·5	22·4	715·4	654·6	119·2	112·2	864·6	794·1	1658·7
Other diseases.... ...	14·2	6·1	23·8	24·5	517·	498·6	100·4	87·8	655·4	617·	1272·4
	27·7	11·	40·3	46·9	1232·4	1153·2	219·6	200·	1520·	14111	2931·1
Increase or Decrease.											
Increase....	0		0		0		0		——		0
Decrease....	6·7		21·2		346·6		59·6		——		434·1

Meteorological Results *from the Madras Observatory Register, for the month of July,* 1863.

1863.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxim.	Observed Extremes. Minim.	Daily Means. Dry.	Daily Means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.		
1st	29·696	100·6	81·8	85·8	76·3	S W by W	204	0·10	Hazy. Rain at 8½ P.M.
2nd	·670	100·6	79·6	87·9	76·3	S. W.	182	0·07	Cloudy. Rain after 4 P. M.
3rd	·666	99·6	81·1	90·8	75·3	S W by W	170	.....	Cloudy,
4th	·695	99·8	82·6	84·8	76·8	S. W.	189	0·34	Do. Rain at 4 and 6½ P.M.
5th	·719	99·3	80·6	85·2	75·5	S. S. W.	167	0·03	Passing showers after 4 P.M.
6th	·687	98·4	79·8	84·2	75·5	S. S. W.	135	0·14	Rain after 10 P.M. [P. M.
7th	·659	91·0	77·0	81·4	75·5	S. W.	129	0·34	Overcast. Rain at 2½ A.M. and 9
8th	·636	92.4	75·9	80·9	76·4	S W by W	96	0·04	Overcast.
9th	·671	93·6	76·7	79·7	76·3	S. S. W.	130	0·25	Do, Steady rain after 4 P. M. A heavy thunder storm at 6¾ P. M., from N. W.
10th	·719	91·6	75·8	82·3	76·9	S.	142	0·11	Chiefly overcast Shower at 9½ P.M.
11th	·732	91·8	76·8	83·5	77·9	S. S. W.	124	0·36	Passing clouds. Thunder shower at 11¼ P. M.
12th	·757	92·4	75·5	82·4	76·4	S W by W	114	0·13	Day chiefly fine, Shower at 11¼ P. M.
13th	·768	92·7	78·7	84·7	77·0	S.	119	.....	Flying clouds, Fine night.
14th	·791	92·9	78·6	82·8	78·3	S.	100	.....	Flying clouds.
15th	·784	82·8	73·4	78·9	75·5	W. S. W.	125	2·39	Overcast. A thunder storm about 2 A.M. and rain from 1¼ A.M. till sunrise.
16th	·772	91·1	76·9	84·0	76·8	S. S. W.	129	.. ....	Dull and hazy.
17th	·760	93·2	76·9	84·0	75·1	S W by W	136	.....	Do.
18th	·713	94·6	76·9	85·2	75·4	W. S. W.	153	.....	Hazy.
19th	·655	95·4	77·0	85·3	76·8	S. W.	147	.....	Passing clouds. Fine night.
20th	·660	93·0	77·3	85·3	76·4	W.&S.E.	150	.....	Chiefly fine. [able.
21st	·655	95·1	81·2	86·9	77·0	S. W.	154	.....	Passing clouds. Wind very vari-
22nd	·661	89·8	77·4	83·5	76·6	W.	131	0·13	Frequent showers before 9 A. M.
23rd	·665	83·2	75·4	78·5	75·2	S W by S	148	0·54	Heavy rain before 2 A. M. Dull [and showery.
24th	·654	89·2	76·2	82·6	75·3	S W by W	134	90·0	Overcast.
25th	·633	91·0	78·0	84·7	74·8	W. by S	176	.....	Do.
26th	·757	90·9	79·2	84·0	75·1	W. S. W.	123	.....	Do.
27th	·668	91·9	78·4	84·5	74·9	W. by S.	153	0·06	Cloudy.
28th	·689	94·3	78·0	85·1	75·6	S. W.	163	.....	Do.
29th	·732	94·3	78·2	85·9	76·0	S. S. W.	127	.....	Passing clouds.
30th	·721	96·0	78·7	85·6	77·5	S. by W.	134	0·02	Chiefly overcast. Thunder and lightning, with a light shower, before
31st	·738	96·0	78·4	87·1	76·2	S W by S	158	.....	Passing clouds. [midnight.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 3 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of August,* 1863.

1863.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxim.	Observed Extremes. Minim.	Daily Means. Dry.	Daily Means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Inches.	°	°	°	°		Mls.	Ins.	[P.
1st	29·773	94·5	78·4	86·1	76·8	S. S. W.	159	0·01	Flying clouds. Shower about
2nd	·788	96·4	77·2	83·9	75·8	S. S. W.	143	.....	Cloudy. Thunder and lightni
3rd	·748	95·2	76·4	84·6	76·7	S. W.	164	.....	Cloudy.
4th	·741	92·0	77·3	81·9	74·6	S. S. W.	116	0·08	Nearly Overcast. Rain at 2½ P.
5th	·760	92·5	76·0	78·0	74·1	S. S. W.	123	0·74	Nearly Overcast. Rain at 3½, 4½, and 11½ P. M.
6th	·737	91·2	75·4	82·2	76·4	S. W.	128	0·05	Nearly Overcast. Shower at 5½ P
7th	·727	92·5	76·7	83·2	78·2	S W by W	142	0·48	Nearly Overcast. Rain at 5, 6
8th	·750	89·2	76·2	82·4	75·9	W. S. W.	141	.....	Overcast. [10½ P.
9th	·749	92·0	77·1	81·4	74·2	S W by W	156	0·23	Do. Rain from 8 to 9 P. M
10th	·727	91·4	76·3	82·2	75·6	W. S. W.	129	0·08	Chiefly overcast. Rain at 10 P.
11th	·687	84·4	76·1	80·8	74·4	W. by S.	109	0·04	Overcast. Shower at 10 P. M.
12th	·643	93·5	76·2	85·1	74·3	W. S. W.	171	.....	Heavy passing clouds.
13th	·630	93·2	77·2	84·9	74·5	S W by W	180	0·01	Cloudy. Shower at 6¾ P. M.
14th	·694	94·0	77·0	86·4	74·8	W. S. W.	159	.....	Chiefly overcast.
15th	·694	95·8	78·6	85·1	7·42	S. W.	158	0·03	Cloudy. Showers at 5¼ & 10 P.
16th	·692	96·0	79·1	85·2	75·2	S. W.	159	0·09	Flying clouds. Showery eveni
17th	·710	93·0	77·6	83·3	75·9	S. S. W.	161	0·41	Cloudy. Rain at 3½ A. M., and fi 8½ P. M.
18th	·740	94·8	75·8	83·4	76·3	S. S. W.	155	0·29	Passing clouds. Rain at 5½ P. M
19th	·771	90·8	76·1	83·8	77·6	S.	128	.....	Partly fine. Cloudy night.
20th	·797	92·3	76·4	83·5	77·6	S. W.	134	0·26	Do, Rain before sunrise and
21st	·789	91·7	79·0	83·2	77·3	S. by W.	129	0·01	Partly fine, Light showers. [5¾ P
22nd	·773	93·2	78·0	84·4	77·9	S.W. by S.	138	0·09	Chiefly fine.
23rd	·791	92·2	77·2	84·6	77·2	S.	129	.....	Do.
24th	·803	91·1	77·4	85·2	77·0	S. S. E.	119	.....	Do.
25th	·805	92·2	79·2	84·9	78·1	S. S. E.	112	.....	Light clouds. [Rain at 10½ P
26th	·788	93·0	78·2	83·8	76·2	S. S. W.	107	0·16	Fine morning; cloudy nig
27th	·786	91·1	75·4	82·2	77·9	S. S. W.	125	0·08	Fine day. Shower at 1 A. M.
28th	·758	92·0	78·4	84·6	78·0	S. S. E.	131	.....	Passing clouds. Fine night.
29th	·729	92·0	78·5	85·2	78·5	S. S. E.	127	.....	Chiefly fine.
30th	·726	94·0	76·4	82·6	76·3	W. & E.	122	.....	Hazy clouds.
31st	·719	92·7	77·7	84·3	76·8	S. S. E.	118	.....	Light clouds.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., the daily means are obtained by the application of hourly corrections deduced from tw years' observations. The cistern of the Barometer is 27 feet above the level of the sea, the receiver of the Rain gauge is 3 feet from the ground. The wind and rain registered for the current civil day—from midnight to midnight.

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Barometer corrected and reduced to 32° Fahr.	Standard Thermometer. Observed Extremes. Maxim.	Observed Extremes. Minim.	Daily means. Dry.	Daily means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
Ins.	°	°	°	°		Mls.	Ins.	
29·695	91·5	78·2	83·5	77·1	S. W.	111	.....	Cloudy. [P. M.
·687	89·3	78·2	85·2	77·1	S. W.	138	0·05	Nearly overcast. Shower at 10¼
·727	83·1	74·3	77·7	73·8	W. S. W.	161	0·75	Overcast. Rain from 1½ to 9 A.M., with thunder and lightning.
·712	86·1	76·2	80·6	76·3	S W by W.	70	0·01	Do. Light rain fall before sunrise.
·691	83·3	76·0	79·6	75·3	W. S. W.	74	0·27	Do. Rain at 2½ and 6½ A. M.
·709	83·3	76·1	78·9	75·1	S. W.	105	0·19	Do. Rain from 6 to 10 P.M.
·712	86·5	75·2	79·5	74·0	S W by W.	108	.....	Overcast.
·745	90.4	75·9	82·4	75·8	S W by W.	121	0·02	Chiefly overcast.
·731	91·2	75·6	84·4	76·4	S. W.	113	.....	Do.
·720	91·8	77·8	84·9	75·4	W. S. W.	128	0·02	Do.
·738	91·3	76·6	84·3	76·0	S W by W.	126	0·10	Overcast. Rain about 1 A. M.
·810	91·6	77·4	83·6	75·8	S. S. W.	151	0·02	Chiefly overcast.
·839	91·6	77·4	82·1	76·8	S. S. W.	147	.....	Cloudy. [fine evening.
·832	88·3	74·3	81·0	77·2	S. S. W.	159	0·34	Rain from 2 to 4 A.M. Dull day;
·788	92·5	76·2	84·1	75·6	S. W.	149	0·06	Fine day; cloudy night. Shower at 11 P.M.
·759	93·2	75·6	85·1	76·6	S W by W.	143	.....	Fine, with flying clouds.
·755	85·8	72·9	81·3	75·7	W. by S.	105	0·88	Rain until 2¼ A.M. Overcast day.
·769	87·0	76·4	80·0	75·0	S W by W.	124	0·09	Shower about 1¾ A.M. Chiefly overcast day.
·754	91·5	76·8	85·3	76·0	W. by S.	137	.....	Fine, with passing clouds.
·709	93·4	78·4	86·0	74·9	S W by W.	165	.....	Do.
·705	90·1	77·6	84·0	73·5	W. S. W.	162	0·03	Chiefly overcast.
·710	87·1	76·4	82·9	72·3	W.	185	.....	Overcast.
·716	92·3	79·2	85·3	74·4	W.	139	.....	Cloudy all day.
·747	95·5	78·3	87·7	74·9	W. by N.	142	.....	Passing clouds.
·732	97·3	80·6	88·3	73·7	W. by S.	136	.....	Do.
·747	96·3	78·4	86·1	76·3	S. S. W.	156	.....	Light clouds.
·766	94·7	77·6	86·4	77·2	S.	142	.....	Chiefly fine.
·751	95·2	78·8	86·0	77·0	S. by W.	115	.....	Flying clouds. [ning at 10 P.M.
·762	95·3	79·2	85·7	76·2	S.	137	.....	Partly fine; thunder and light-
·749	93·3	77·6	85·7	78·4	S.	132	0·21	Rain about 1 A. M.; overcast day.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P. M., and daily means are obtained by the application of hourly corrections deduced from twenty ars' observations. The cistern of the Barometer is 27 feet above the level of the sea, and e receiver of the Rain gauge is 3 feet from the ground. The wind and rain registered are the current civil day—from midnight to midnight.

No. 19.—*Re-section of the tibia and fibula for ununited fracture and false joint of the former.* By Surgeon Major J. W. Mudge, M. D., late Surgeon 2nd District, Madras.

(With an Illustration.)

August 17th 1863.—Isabella Hill, Æt. 12 years, East Indian, an inmate of the Military Female Orphan Asylum of Madras, into which she was admitted in 1857.

History.—So far as can be ascertained, the child was born with a fractured leg or sustained the fracture during or very shortly after birth. Not being in charge of the Asylum when she was admitted, I was not aware of the case nor did it ever come under professional notice till the patient was admitted for an ulcer, caused by the projection of the lower fractured portion, from which two small pieces of necrosed bone were removed. The tibia was then found to be fractured in its lower third, the lower portion projecting upwards and outwards. The fibula had thus become the main support of the limb; had increased very much in size and density and was bowed outwards, accommodating itself in some degree to the deformity of the tibia. The foot was necessarily much contorted and, as if to compensate for the general shortening of the leg, the left side of the pelvis had become two inches lower than the right, bringing the left-knee also by so much lower than the right.

The child being in good health and very desirous of permanent relief, it was determined to perform re-section; accordingly on the 19th August and in the presence of Drs. Paul, Montgomery and Chipperfield, who kindly rendered their aid, the following operation was performed.

Operation.—The child having been brought under the influence of chloroform, an incision was made along the anterior edge of the fibula opposite the fractured ends of the tibia about 3½ inches in length; the integuments were then dissected off the fibula for an inch and a half with a view to remove altogether so much of that bone. This proceeding was absolutely necessary, as from the curved form of the fibula it would have been impossible to bring the ends of the tibia, when freed from their false joint, into proper apposition. It was at first attempted to divide the fibula with Liston's

"Dr. MUDGE'S CASE OF RESECTION."

(From a Photograph by Dr. Hunter Madras School of Arts.)

Drawn and Lith.d by G. Winchester. Madras.

large bone forceps, but so dense was the condition of the bone, that not the slightest impression could be made on it with this powerful instrument; it was therefore sawed across in two places and the intervening portion removed. The false joint was now reached, and after considerable difficulty the dense ligamentous structure surrounding it was divided, and both ends of the bone sawed off and removed. There was very little bleeding. The edges of the wounds were stitched and the limb carefully bandaged and splints applied.

A wooden splint on the principle of Macintyre's double inclined plain had been prepared. For this there was afterwards substituted one of tin made in the Madras Gun Carriage Manufactory: and this was found to answer the purpose remarkably well.

The child did not suffer in any way from the operation, and for the first three or four days every thing promised most favorably. A considerable portion of the wound healed, but pus now began to form, and on the 29th a large quantity was evacuated by incision. About the same time nervous twitches began, with a quickened pulse, and fears were entertained that tetanus might supervene. These alarming symptoms, however, gradually abated under the free use of morphia with wine and generous diet. The abscess continued to discharge pus more or less freely for more than a month, and was not entirely healed till the 20th November.

On the 22nd October bone union had taken place, and the patient having been more than nine weeks in the same position, the leg was removed from the double inclined plane enveloped in a starched bandage and placed in the straight position between two long cushions of sand.

It was found after a few days trial that the muscles, apparently from long continued previous action, had a tendency to cause outward curving of the limb, and on the 1st November the leg was again placed on the tin splint and kept there till the callus had become thoroughly hardened. The splint was finally removed on.

The position of the foot is now greatly improved, with the aid of a high cork soled shoe the child runs about and plays much as other children, and the operation must be considered entirely successful.

Remarks.—Erichsen in the last edition of his "Science and Art of Surgery," says in regard to the operation of resection of false joints, "of 39 cases collected by Norris, in which the ends of bones were either resected or scraped 24 were cured, 7 derived no benefit, and 6 died. In those cases of the operation that are successful, some shortening of the limb must be expected to result; and if the fracture be very oblique, it would of course be impossible to remove more than a very limited portion of it, and, consequently, very perfect union could scarcely be anticipated."

There can be no doubt that the operation often presents many difficulties. It is by no means an easy matter to get at the ends of the bone or to protrude them, embedded as they are in integuments, for the fair action of the saw, as it is of course desirable to separate the ends as little as possible from their fleshy and muscular attachments. This was especially found in the present case, where owing to the necessity of dividing the fibula the incision had to be made further away from the end of the bone than it need otherwise have been, in order to avoid making two wounds.

The formation of the abscess was also an untoward event as it was found impossible to prevent the pads and bandages from becoming saturated with pus, which of course necessitated much more motion of the limb than was desirable. The favouring circumstances here, naturally good health, great patience and contentment, and airy upstair hospital and careful and considerate attendants.

From the 1st December 1862 the case ceased to be under my care, Dr. Montgomery having succeeded to the charge of the District of which the Female Asylum is one of the charges. It was a long time before complete and permanent cicatrization of the seat of the incision took place, as a few small particles of bone which were detached kept up occasional irritation. When these were finally removed the case was well.

[Note by Dr. Montgomery.]

From the time the foregoing case came under my observation, the changes from day to day were unimportant, and may be best inferred from the following brief abstract taken from the report of the case in the Hospital Records. The external wound, apparently healed at the end of November, remained swollen and irritable till 3rd December, when on setting the child in an upright position some hœmorrhage occurred from it. The unhealthy cicatrix gradually ulcerated and an exposed piece of dead bone was felt on 17th Idem, probably the lower end of the upper fragment of the fibula. This bone, though evidently

dead, did not come away until 29th January, when it was removed through the opening which had been carefully dilated with prepared Sponge.

By the end of February all irritation had subsided, the bone was firmly united, the cicatrix firm, healthy and painless, and the health and spirits of the patient were highly satisfactory.

As a precautionary measure she was detained in Hospital for the next three months, and was daily exercised, and by the assistance of a boot with a high sole she now walks well.

The general result of the operation may be seen in the accompanying Lithograph. The general deformity existing at the time of operation may be inferred from Dr. Mudge's description. More than a year after the operation I carefully measured the limbs on each side, and the following is the general result.

September 30, 1863.—Isabella Hill, Æt. 13. Total height 4 feet 4½ inches.

From crest of ilium to base of heel—right side 2 feet 6½ inches, left side 2 feet 3¼ inches.

Crest of ilium of left side ¾ inch lower than on right side.

Circumference of leg below knee—right side 9 inches, left side 9¾ inches.

Circumference of leg at the middle—right side 8¾ inches, left side 9 inches.

Circumference of leg over the seat of fracture—right side 7 inches, left side 8¼ inches.

Circumference of leg over instep—right side 7¾ inches, left side 7¼ inches.

The non-development of the tarsal bones; the universal thickness of the whole left leg, especially near the fractures; and, the obliquity of the pelvis, are all natural results and to be expected. But it will be observed that the lowering of the left side of the pelvis has been already diminished from 2 inches to ¾—and I hope that it may almost entirely disappear in course of time.

H. B. M.

PART IV.

MEDICAL INTELLIGENCE.

Inspector General of Hospitals.

Orders of Home Government regarding period of tenure of office as Inspector General of Hospitals. (Fort Saint George Gazette, p. 297, 18th August 1863.)

The following Despatch from the Secretary of State for India has been published.

To H. E. the Right Honorable the Governor General of India in Council.

My Lord,—Para 1. In a letter* lately received from the Government of Madras, the enquiry is made whether any limit is to be placed to the tenure of the office of Inspector General of Hospitals.

* No. 43, dated 5th March.

2. The Government of Madras point out that, under paragraph 8 of the Royal Warrant of the 13th January 1860, Inspector Generals and Deputy Inspector Generals are placed on the retired list, on attaining the age of sixty-five years.

3. With reference to the General Order by the Governor General, No. 964, 31st July 1857, they observe that, if an officer is allowed now to hold the office of Inspector General until retirement, the interests of other Medical officers must be injuriously affected; while, on the other hand, it does not appear to them how an Inspector General of Hospitals, with substantive rank under the Warrant, but of short service, can revert to other duties to qualify for the highest rates of pension, as provided by paragraph 9 of the General Order by the Governor General.

4. They are of opinion, however, that the interests of the Public Service will be best promoted by limiting the tenure of the appointment of Inspector General to five years.

5. Under the instructions conveyed in the Despatch from the Court of Directors, No. 92 of 10th June 1857, the tenure of office by the Director General and Inspector General was limited to five years.

6. The several Inspector Generals, under the operation of the Royal Warrant of 13th January 1860, hold the offices styled under the former organization "Director General" and "Inspector General," and I consider that the Rule limiting their tenure of office to five years should be made still applicable to these officers.

7. An officer holding the rank of Inspector General, who may be removed from his appointment under the Rule, will be eligible, at the discretion of the Government, for employment for a further similar period, subject always to the operation of Clause 8 of the Royal Warrant of 13th January 1860.

8. The Deputy Inspector Generals of Her Majesty's Indian Service represent the Superintending Surgeons of the former organization, and I do not consider it necessary, pending the settlement of the question of the amalgamation of the British and Indian Medical Services, to apply any limit beyond that laid down in Clause 8 of the Royal Warrant to the tenure of appointment by these officers,—Superintending Surgeons under the former organization, not having been subjected to any rule of this nature.

9. With regard to the difficulty suggested by the Government of Madras as to the manner in which an Officer of the rank of Inspector General, but of short service, can revert to other duties to qualify for the higher rates of pension, I believe such occasions will be rare.

10. The circumstances of such officers having been preferred to their seniors in the Service for promotion, would probably induce the Government to re-employ them on a vacancy occurring in a high position; in the meantime, if not in a position to retire from the Service, they must remain unemployed.

I have, &c.,

(Signed) C. Wood.

The Prickly Pear.

The following correspondence about an insect which is said to destroy prickly-pear will be read with interest; but we confess that all attempts of this kind to eradicate this serious nuisance appear to us to be little calculated to be successful. The extent to which this noxious plant has been

allowed to overrun Madras is perfectly disgraceful, and we hope that active measures will be soon adopted to destroy it altogether :—

To the Acting Secretary to Government, Bombay.

Judicial Department.

Sir,—In reply to your letter No. 3,969 of November 29th, 1862, I have the honour to inform you that the insect on the piece of "prickly pear" sent with your letter, is a species of Coccus, a genus which produces lac-lake, kermes, cochineal, &c. &c.

2. I presume this to be the insect referred to by those reporting the destruction of the "prickly-pear" by insects.

3. I am not aware of the destruction of the "prickly pear" on any scale by this, or any other insect, but in the economy of nature the insect world is employed to restrict the exuberance of vegetation.

4. But if any particular insect preys on the "prickly pear," its range in the Deccan is no doubt, co-extensive with that of the plant, and has been fixed by nature. No human agency is likely to modify it in any degree, and I could not hold out any hope that the spread of prickly-pear jungles could be checked by any attempts to artificially stimulate the development of any such insect.

5. The insect on the piece of prickly pear under report bears the closest resemblance to the cochineal Coccus, and yields a beautiful dye to water. It would be interesting perhaps to make enquiries in regard to it, with reference to this fact ; although with such quantities of lac-lake as India affords, it is not very probable that it would ever be profitable to farm the "prickly-pear" for its dye.—I have, &c.

G. C. M. Birdwood,

Secy. to the Govt. Central Museum.

Town Hall, *December* 1*st*, 1862.

No. 2.

To W. H. Havelock, Esq.,

Acting Secretary to Government, Bombay.

Sir,—With reference to the correspondence forwarded with your letter No. 3,669 of 29th ultimo, concerning the insect said to destroy prickly-pear, I have the honour to state that the supply which was forwarded to Belgaum reached that place a few days after I gave over charge to Mr. Gordon, and was brought to me.

2. I opened the basket as the man who carried it said it contained some wonderful insect ; and perceiving at once that it was a species of cochineal sent it on to Mr. Gordon, without opening the letter which accompanied, imagining that the insect had been sent to

prove the existence of cochineal in the district whence it came, or with a view to its introduction at Belgaum.

3. No one who has seen the real cochineal alive could doubt for a moment the nature of this insect ; to make sure, I squeezed one ; when the juice which exuded was, instead of a dirty brown, as described in the correspondence, a very rich, though dark crimson.

4. I cannot say whether the insect is of that fine variety known in America as " grana vera," the exportation of which was at one time punishable with death. It is probably not ; as I believe that description of insect to the improved result of careful attention for many generations ; but if it be only the ordinary wild variety, its being indigenous in this country (a fact, I fancy, not formerly known) gives promise of its turning out a valuable article of commerce, if skilfully treated.

5. I was under the impression hitherto that cochineal would not live on the prickly pear, but required its own peculiar cactus. In the correspondence above alluded to, I observe the curious fact stated, that the insect is said to destroy only one specie of prickly-pear (the male) and to avoid the female. I never heard of this distinction between the male and female prickly-pear before, and doubt its existence. Is it possible that the real cochineal cactus is found growing with the prickly-pear, and that the insect selects its natural food, rejecting that which is unsuited to it? But, in that case, why should it kill the plant ? I was not aware that it did so in the plant ? I was not aware that it did so in the cochineal plantations in America, and have no work at hand which touches on the subject ; but it may prove to be the case : or can the solution of the difficulty be this, that the insect feeds on both cacti, but does not injure that which is its natural habitant, while it destroys the prickly-pear ? Government will perhaps consider these points worthy of further inquiry.

6. My 1st Assistant, Mr. Elphinstone, to whom I circulated the correspondence, has ascertained that the insect is not unknown here ; as a few years ago it was the means of totally destroying, in a very short time, the prickly-pear at Sawanoor, which the late Nawab had for many years in vain attempted to get rid of. It is no longer, I regret, to be found there, as its work is done ; but in the hope that it may yet linger somewhere in the Collectorate, I have ordered careful search to be made ; which failing, I will endeavour to procure some from the Nizam's territory.

7. The benefit to be derived from it, as a prickly-pear exterminator alone, is incalculable. The fort in which I am writing is surrounded by dense masses of this poisonous nuisance, which an expenditure of thousands of Rupees would be inadequate to remove by the ordinary process.—I have, &c.

L. H. B. Tucker,
Magistrate of Dharwar.

No. 3.

QUARTER MASTER GENERAL'S OFFICE.

Fort St. George, 1st October 1863.

From Captain R. A. CLEMENTSON, *(doing duty)* Quarter Master General's Department; to A. HUNTER, Esquire, M.D., Superintendent of the School of Industrial Arts.

SIR,—I have the honor by desire of His Excellency the Commander in Chief to forward for your perusal the papers* as per margin, and to request you will inform me whether you approve of the mode proposed by the Deputy Inspector General of Hospitals, Ceded Districts, for sending the prickly pear insect to Madras, or whether you can suggest any better plan.

* To be returned.

Letter from Officer Commanding Ceded Districts, No. 71, dated 14th September 1863.

Proceedings of Madras Government, No. 3857, dated 8th November 1862, and No. 2571, dated 11th August 1863.

Memo. from Officer Commanding H. S. Force, No. 321, dated 25th August 1863.

I have the honor to be, Sir,

Your most obedient servant,

R. A. CLEMENTSON, Captain,

Quarter Master General's Department.

No. 4.

HEAD QUARTERS, CEDED DISTRICTS, BELLARY,

14*th September* 1863.

From Major General E. ARMSTRONG, Commanding Ceded Districts; to the Quarter Master General of the Army, Fort Saint George.

SIR,—I have the honor to acknowledge your letter No. 6987 of the 3rd Instant, and to subjoin Extract from a communication from the Deputy Inspector General of Hospitals, Ceded Districts, reporting his opinion as to the best method of transporting the Prickly Pear Insect to Madras, and I propose to make arrangements accordingly at the proper season, after the monsoon, before which period it is considered inexpedient to make further trial of the experiment at this station.

I have the honor to be, Sir,

Your most obedt. servant,

E. ARMSTRONG, Major General,

Commanding Ceded Districts.

No. 5.

Extract of a letter from the Deputy Inspector General of Hospitals, Ceded Districts ; to the Deputy Assistant Quarter Master General, Ceded Districts, No. 72, dated Bellary, 10th September 1863.

"The (Prickly Pear,) insects were sent to Bellary from Lingasoogoor in baskets carried by a Cavady cooly, and I believe arrived in a perfectly good state, and I would suggest that the same mode of conveyance should be adopted if the insects are to be sent through, or from, this station, as far as Tripatoor, and there the cooly with his load to take rail to Madras, or which would be a much more rapid mode of conveyance, and I would deem equally secure as regards the insects, that the basket should be sent by the Mail Cart to Tripatoor and thence by rail to Madras, several baskets in succession might thus be conveyed.

Some authority at Bangalore and Tripatoor being communicated with in regard to safe custody and further transmission of the loads."

(True Extract.)

N. A. Riach, Captain,
Dy. Quarter Master General, C. D.

No. 6.

Military Department.

Proceedings of the Madras Government.

Read the following papers :—

From the Quarter Master General, Head Quarters, Bangalore, 31st July 1863, No. $\frac{73}{6259}$; to the Secretary to Government, Military Department.

I have the honor, by desire of His Excellency the Commander-in-Chief, to report that, on the receipt of Order of Government, No. 387, dated 8th November 1862, copies of the Order were sent to the Officers Commanding the Hyderabad Subsidiary Force and Bellary, with instructions to obtain some leaves of the Prickly Pear with the Insects' nest thereon, and to give the experiment a fair trial, reporting the result to this Department.

2. The Officer Commanding Bellary reports that the experiment failed, and that no vestige of the Insect can now be seen. The Deputy Inspector General of Hospitals, Ceded Districts, however, considers it advisable that the experiment should be tried once more, after the rains, and that a second supply should be then sent for.

3. The Report from the Officer Commanding Hyderabad Subsidiary Force is most satisfactory, and I am desired to submit it in full for the information of Government.

No. 248, dated 30th June 1863.

4. The Commander-in-Chief would now recommend that the experiment be again tried at Bellary, and that an endeavour be also made to transport a supply of the Insect to Kurnool, Cuddapah, and especially to Palaveram.

5. A successful result to the experiment at the latter Station would save a large expenditure, otherwise to be incurred in the destruction of the Plant.

6. If Government approve of the proposal, Dr. Hunter will be consulted as to the best means of transporting the leaves with the Insects on them from Secunderabad to Palaveram.

From the Officer Commanding Hyderabad Subsidiary Force, Head Quarters, Secunderabad, 30th June 1863, No. 248 ; to the Quarter Master General, Bangalore.

Agreeably to instructions conveyed in Memorandum No. 8999, dated 19th November 1862, appended to Proceedings of Madras Government, No. 3857, dated 8th November 1862, I have the honor to report that on 25th December 1862, three small pieces of the Prickly Pear having the Insect thereon were received from the Resident, Hyderabad.

2. On the 27th of the same month, these branches were placed among some growing healthy Prickly Pear, the preparation described in paragraph 4 having been first sprinkled thereon.

3. At first, apparently from the Prickly Pear being of the female or fruit and flower bearing species, the Insect did not seem to take effect. This continued for about two months, during which time it was carefully watched. Since then the effect has been very great. The Insect has spread and taken possession of patches of Prickly Pear in every direction, the whole of which is evidently being destroyed.

4. The result I consider most satisfactory, and I am adopting measures for having the Prickly Pear, with the Insect thereon, distributed in every direction where Prickly Pear is found growing, and I hope by the end of the year to be able to report further success.

Order, No. 2771, 11th August 1863.

The Governor in Council approves of the measures proposed in paragraph 4 of the foregoing letter.

(True Extract.)

R. Hamilton, Lieut. Colonel,

Deputy Secretary to Government.

No. 7

MILITARY DEPARTMENT.

Proceedings of the Madras Government.

Read the following papers :—

From Lieutenant-Colonel J. G. BALMAIN, Royal Artillery, and Officiating Commissioner Chutteesgurh Division, Raipore, 20th October 1862 ; to the Secretary to Government, Military Department, Fort Saint George.

Having observed in the Bombay Government Gazette of 7th August 1862, page 281, that it was considered a desideratum to eradicate the Prickly Pear, I addressed the Secretary relative to what had occurred in the Raichore Doab, when I was Deputy Commissioner of it some years ago—the inquiries resulted in a letter of which I have now the honor to enclose a copy, in case it should be deemed expedient by the Government of Madras to get rid of the noxious Prickly Pear, which it strikes me I have seen over-abundant in many of the Stations and Villages of the latter Presidency.

From RUSTOMJEE VICCAJEE, Talookdar, Raichore Doab, Lingsoogoor, 7th October 1862 ; to the Collector, Belgaum.

With reference to the Resolution of the Government of Bombay dated 17th September last, and forwarded by you, I have the honor to state that I yesterday sent to you in charge of a Chuprasse and a Shetsundee, a basket containing several pieces of Prickly Pear on which you will observe that the insects alluded to by Colonel J. G. Balmain, Officiating Commissioner Central Provinces, have made their nests and laid their eggs.

2. The nests have the appearance at a distance of some common salt having collected on the leaf, but on a closer inspection and by touching, it will be observed that this white accumulation is of a soft spongy nature. This is the nest in which the eggs are deposited, and the insect itself is encased in a kind of white film, which if you endeavour to remove, kills the insect, as nothing on the inside is found but a small quantity of thick dark-brown fluid, evidently produced by the destruction of the insect.

3. Some years ago, Kanageeree was over-run by Prickly Pear, when suddenly this strange insect made its appearance, which in a short time entirely annihilated this troublesome plant. Portions of the Pear with insects on it, were afterwards sent to the surrounding Villages where Prickly Pear abounded, and in every case it had the desired effect on the male species of the shrub. I should here remark that I am given to understand there is a slight difference in the Prickly Pears. The natives call one male and the other female. The male never bears flower, and the female occasionally has a pink blossom. It is a remarkable fact that though the insects

at once annihilate the male species, they are very loath to attack the female.

4. The method adopted for the transmigration of these insects is the following : Portions of the Prickly Pear should be selected whereon these insects have made their nests—these pieces should be transmitted in a basket, carefully placed, so that there should be no pressure on the nests. Wherever it is desired that this insect should locate itself, one tree of the Prickly Pear should be selected, over which the infusion* should be sprinkled, and then the leaf on which the insects' nest is, should be placed at once on the tree. This process induces the insect to take possession of the fresh tree, and when once it has located itself, it will destroy all other Prickly Pear in the vicinity. It is not necessary that the infusion should be sprinkled over more than one tree.

5. After the insects have been placed on the tree for about fourteen days, it will be observed that the white accumulations or nests are rapidly spreading over all the trees adjoining ; and in about another fourteen days, the branches will begin to fall to the ground, where they of course rot ; and in about four or six months the whole jungle of Prickly Pear will have disappeared. These insects not only entirely destroy the tree and its branches, but seem likewise to poison the roots, as they never shoot up again.

6. Any further information that you may require on the subject, it will afford me much pleasure to furnish.

ORDER, No. 3857, *8th November*, 1862.

Ordered that the acknowledgments of Government be conveyed to Lieutenant-Colonel Balmain for the information contained in the foregoing letter, which will be communicated to the Departments of Public Works and Quarter Master General, and laid on the Editors' Table.

(True Extract.)

(Signed) H. MARSHALL, Colonel,

Secretary to Government.

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* Two seers of Jowarree should be thrown into a gallon of water and allowed to stand for two days—the Jowarree should be then thrown away and the water kept, to which an equal quantity of whey must be added. *Jowarree Sojee* with a little salt should then be gradually mixed with the above liquid, till it becomes the consistence of *very thin* paste.

No. 8.

From ALEX. HUNTER, Esq., M. D.,

Hon. Secy. Agri-Horticultural Society.

SIR,—In reply to your letter of the 13th Instant, accompanied by letter No. 352, from Col. J. T. Grant, Brigadier Commanding Hyderabad Subsidiary Force, and Memo. from acting Asst. Quarter Master General, on the subject of the transfer of the prickly pear plant with the insect which destroyed it, I am of opinion that the suggestions offered by Major Mainwaring regarding the mode of distributing the insect are very practical and likely to succeed at this season of the year, if the instructions be carefully attended to. The points of greatest importance are that both the insects and the plants shall have a good supply of air, and that they be transferred from one station to another as quickly as possible, avoiding the hot season of the year.

The letter and Memo. referred to are herewith returned.

No. 9.

(Extract.)

* * *

"I. It appears to me that the Prickly Pear might be sent at this time of the year.

"II. It should be packed in an open work basket placed as follows.

"1st. One layer of fresh Prickly Pear. This should be kept from moving by tapes passed across the basket.

"2nd. Over this a layer of the Prickly Pear which is well inoculated with the insect.

"3rd. Over this another layer of the Prickly Pear supported and kept in its place by tapes passed over and under it.

"III. The object of putting the fresh prickly pear is to provide food for the insect and to enable it to spread thereon.

"IV. A basket packed as above described was kept in my house for 9 days, and at the end of that period opened, when it was found that the insect not only preserved its vitality but had spread all over the fresh branch.

"V. The experiment seems most successful. I would therefore suggest that the Prickly Pear with insect on it be sent in baskets as above by Banghy."

J. MAINWARING, Major,

Ag. Asst. Qr. Mr. Genl. H. S. Force.

Professorship of Midwifery, Madras Medical College.

We understand that the arrangement under which the appointment of Professor of Midwifery has hitherto been held by the Medical Officer in charge of the Eye Infirmary has been ordered to be discontinued, and that in future this Professorship will be held by the Medical Officer in charge of the Lying-in-Hospital. Of the propriety of the new arrangement no question can exist. The former combination of two entirely distinct Professorships was without precedent in any Medical Institution of such standing as the Madras Medical College.

The Conjeveram Dispensary.

A GRANT of Rs. 4,575 has been sanctioned by Government, in aid of the erection of a building for the Dispensary which has recently been established at Conjevaram by the Native community. On the completion of new building, the one in which the Dispensary is at present located, will, we learn, be converted into a Lying-in-Hospital for the benefit of the native women of Conjeveram, and the adjacent villages. The establishment of these useful institutions, is, we are told, mainly owing to the exertions of Dr. Shortt, the Civil Surgeon of Chingleput.

Climate of Rangoon.

It having been reported by the Medical Authorities that the climate of Rangoon has been found to admit of European troops being safely sent there direct from Europe without undergoing any previous Indian acclimatization, the Secretary of State had resolved upon making the necessary arrangements for the immediate relief of H. M.'s 68th Regiment then stationed at Rangoon, by sending out another Regiment direct from England. Although this arrangement has been, of course, disturbed by the removal of the 68th to the seat of war at New Zealand, yet, no doubt, the principle involved will not be laid aside and Regiments will henceforward be sent out direct to Rangoon.

Government Orders regarding the allowances of acting and permanent holders of Staff appointments.

FORT WILLIAM, *the 1st August* 1863.

No. 494 of 1863.—Under instructions* from the Right Hon'ble the Secretary of State for India, the Hon'ble the President in Council is pleased to direct that henceforth no Officer acting in an appointment shall receive more than one half of the Staff Salary attached thereto until he shall have acted six months in it, counting from the date of his joining the appointment. At the expiration of this period he will be allowed the full Staff Salary in all cases if it be available, but not otherwise.

* Dated 30th Sept. 1861, and 16th April 1863.

2. This order applies to all cases, including those of Officers officiating for Staff Officers absent on furlough under Rules 9 and 13 of Government General Order No. 1150, dated 17th November 1854; but it is not to affect the allowances in their present appoinments of those to whom, under any rule or practice heretofore in force, full Staff Salary is now actually passed.

3. The above order is applicable to the three Presidencies.

Liquor Ammoniæ for Snake bites.

"WE learn from the *Lahore Chronicle,* that, last year the local Government caused experiments to be made in the Punjab with Liquor Ammoniæ manufactured by the Chemical Examiner. A statement has been prepared by authority shewing the result of the use of Liquor Ammoniæ during 1862 as a cure for snake bites. In Ferozepore the number of cases treated was 45, all of which were cured. In Lahore 26 cases, of which 3 ended fatally. Shahpore 75 cases, Goojerat 58, cured 55 and 56 respectively. At Googaira there were 2 recoveries out of 71 cases treated. In this district Ammonia was also given in 98 cases of cholera, of which 74 recovered. In other stations of the Punjab the antidote was used with the same general results, but we have not sufficient information to warrant our endorsing the opinion expressed by Government that 'this is very satisfactory.'"

"The proportion of venomous to harmless snakes is about 5 to 95, which seems to be the same proportion that the deaths bear to the cures in the report before us. It would therefore seem to follow that Ammonia is of no value, seeing its application is unnecessary in the case of a person bitten by a harmless snake, while it is of no effect in the case of one who has been pierced by the fang of a cobra de capella. To render the statement useful, the character of each snake should be given, or at any rate in every instance where a cure has been affected after a bite inflicted by a snake known to be poisonous, the fact ought to be recorded. Of course we cannot accord credit to Ammonia in consequence of no fatal consequences resulting from the bite of snakes as incapable of doing harm, as an earth-worm."

[Our own experience would induce us to believe that *Eau de Luce* and Liquor Ammoniæ are valuable in Snake bite, and that they should be freely applied externally and administered internally in all cases.—Ed. *M. Q. J.*]

Does Smoking produce Cancer?

"Dr. Richardson writes:—There is still one other form of cancerous disease which deserves consideration; I mean cancer of the lower lip. The lower lip is affected, not unfrequently, in the predisposed, with a variety of cancer called from its spreading and superficial character "epithelial cancer." It has been observed unquestionably of this cancer that it occurs frequently in persons who smoke short pipes, and that it breaks out at that part of the lower lip where the pipe produces an impression. Here therefore we may, without hesitation, assume that smoking excites the cancerous disorder; but this exciting cause is indirect in its action, inasmuch as it is connected with the pipe, and not with the tobacco; for it has been found by experience that the mischief does not become developed in cigar smokers, nor even in those who smoke pipes having a smooth surface, and which are of sufficient length, and as a consequence are cool—but that the accident happens mainly from the use of the short cutty pipe, which is held very firmly in the lips without any support from the hand, and conveys to the lip considerable heat, amounting sometimes almost to pain. Those who are opposed to tobacco will naturally accept the fact above given as a condemnation of the weed. Those who advocate tobacco, on the other hand, will assert that the statement, if true, tells

nothing against tobacco itself, but simply against an objectionable way of using it ; and I confess that this latter view of the subject is the one with which I should agree. Nay, I do not know whether something more may not be said even on the tobacco side of the controversy, for the truth is this, that whenever the pipe brings out the disease, as we have seen, there existed in the person affected a strong predisposition which would, almost to a certainty, become developed in some one part or other of the body, if it did not break out in the lip. Under such circumstances the life of the sufferer will be considerably lengthened or shortened, according to the point at which the disease manifests itself, and then if there is one point of the body more favourable than another for the development of cancer, it is the lip, and if there is one form that is more open to cure by operation than another, it is the epithelial cancer which occurs in the lip. Hence in the run of cases, it may rather be an advantage than otherwise that the cancerous disease should be thrown out at a spot where, for a time at least, it may divert the development of the fatal growth from more vital organs, and where, in extremity, it lies within the reach of treatment, and even of cure.—*Social Science Review.*

Proposed Improvements in the Building of the Madras Medical College.

Proceedings of the Madras Government.

Read the following papers :—

From Lieutenant Colonel A. J. M. Boileau, R. E., Superintending Engineer, 4th Division ; to Colonel W. I. Birdwood, R. E., Secretary to Government, Public Works Department, Chepauk, dated Madras, 22nd July 1863, No. 1,254.

With reference to the Order of Government, No. 3,057, dated 22nd December 1862, I have the honor to forward a plan and estimate, Rupees 17,300 (which has been examined and corrected in this office), for making certain additions to the Medical College.

The proposed arrangements have been planned by the Executive Engineer in communication with the Principal Inspector General, Medical Department, and the Principal of

the Medical College. They will not be found wholly to accord with the suggestions thrown out by Government in their proceedings in the Public Department, No. 1,440, dated 10th December 1862; the Chemical Lecture room being distinct from the Laboratory, and yet sufficiently close to it for all practical purposes.

The further Museum space has been found by extending the building in its whole breadth on its north side 25 feet.

The Dissecting rooms have been retained as desired by Government. The additions have been planned so as to obstruct as little as possible the General Hospital. The proposed allotment of each room is noted in red ink on the plan.

Funds to the amount of 25,000 Rupees have been provided in the Local Fund Budget, Educational head, for this work; so that the sanction of Government to the estimate, Rs. 17,300, is all that is required to put it in hand at once.

Referred to the Public Department.

(Signed) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

CHEPAUK, 25*th July* 1863.

From E. B. POWELL, Esq., Director of Public Instruction; to the Chief Secretary to Government, Fort Saint George, dated Madras, 7th August 1863, No. 1,601.

In reply to your Memorandum, No. 182, of 27th ultimo, I have the honor to state that, in communication with Mr. Mayer, I have examined the accompanying plan of additions and alterations to the Medical College, and that I approve of the same excepting as regards one point. On this one point, however, which is the arrangement providing for the existing Theatre remaining unaltered, I feel it incumbent upon me to make an urgent representation.

It is to be observed that, in my letter to Government, No. 1,958 of October 1st, 1862, in which I originally recommended the modifications and additions now about to be made, I remarked,—"It appears to me that it would be sound policy to complete the Medical College at once, rendering it suitable to carry out the more advanced aims which the anticipated progress of the country renders justifiable; and that

in the end this course would be found more economical, while it would certainly secure a more homogenous and a more convenient structure than if small additions were to be made from time to time to meet immediately pressing wants."

I now find that the plan, while in my opinion meeting very fairly the wants of the several professional classes, omits to provide accommodation for the increase which may well be expected to take place in the total number of students, so far as regards the Hall or Theatre of the College, in which all general assemblages of the pupil will have to take place. Even omitting consideration of the probable increase in the number of students contemporaneously with the general progress of the Presidency, at this moment the Theatre affords very limited, I might say insufficient, space for the students when assembled for such an occasion as the distribution of prizes. Moreover the area available for visitors is miserably small, as every one must testify who has attended an Anniversary of the College.

In these circumstances I beg strongly to recommend that the plan be returned to the Department of Public Works, in order that provisions may be made for the enlargement of the Theatre; in this recommendation the Principal of the College entirely concurs.

I may remark that the sum I provided in my Building Budget in connexion with the alterations and additions to the College is Rupees 25,000, while the estimated cost of carrying out the present plan is only Rupees 17,300. Thus I presume no difficulty can arise with regard to funds.

ORDER THEREON, 15th August 1863, No. 204.

The Governor in Council concurs with the Director of Public Instruction, in considering it desirable that the principal Theatre of the Medical College should, if possible, be enlarged. The plan and estimate will accordingly be returned, through the Department of Public Works, to the Superintending Engineer for revision on this point, in communication with the Director of Public Instruction.

[In publishing the foregoing we cannot fail to express our pleasure at the prospect of our Medical College being rendered more fit to carry out efficiently the noble objects of its institution.]

The Indian (Local) Medical Service.

"SOME short time since, it was generally believed that a scheme for the amalgamation of the three Indian Medical Services with the Medical Department of the Royal Army, had been elaborated and settled by the Duke of Cambridge and the Minister at the head of the India-office, but it appears that the scheme has again fallen to pieces ; and its settlement is as far off as ever. This delay and trifling with a once favoured service is bearing fruit; for, judging from reports which have just been received from England, the Army Medical Department does not appear to stand high in public esteem, under the prevailing system of management. What with Royal warrants and privileges published in one year, and cancelled in the next, and the uncertainty regarding the emoluments and nature of the future service in India, young medicos of the present day are afraid to enter the army ; and for a long time back, parents and guardians have been dissuading young men from studying medicine for this purpose. Hence few students are found in the medical schools, studying with the avowed object of becoming army doctors now-a-days. Only stray and restless characters, who have failed to find a resting-place in civil life, go up to the so-called competitive examinations."

"At first there was a rush of candidates, but the true character of the service soon became known, and the result is, that the office of an assistant surgeon in the army has found its proper market value, which is not a high one. Whether this view of the case be correct or not, it is evident that there is something wrong in the constitution of the department, or the youth of England have taken a great dislike to physic, as at recent competitive examinations for assistant surgeoncies in the army, 42 candidates only presented themselves for 90 vacancies : 38 were found to be possessed of the requisite qualifications, but only 16 passed ; thus showing that the standard of proficiency demanded is not higher than that of the colleges and universities. On the contrary, it proves what has been hinted at above, that the best students do not as a rule apply for admission into the army. This is a bad state of affairs, and ought to compel the authorities to put the service on a satisfactory and reliable footing."

"During the old Company's reign, the three medical establishments of India numbered together over 850 officers, and

in the Royal Army there were in round numbers before the mutinies, 750—of whom 50 or 60 were constantly in India; but for the last few years the numbers have been, on an average, 950—of whom 150 are constantly in India. The Horse Guards, since the amalgamation of the armies, have undertaken to increase their medical department, and from it to supply medical men for the three presidencies, and have been labouring hard to get this large patronage into their own hands. But they are not likely to succeed, if they cannot induce more than 42 candidates, of whom only 16 can pass, to fill 90 vacancies. Moreover it is not generally known, although it is a fact, that there is at the present time a paucity of medical officers in India as well as at home, and Government have been rather startled by the spectacle presented at the recent concourse in London."

"The following table will show at a glance how matters stand, and also what immense patronage will fall into the hands of the Horse Guards' potentates, by the amalgamation of the medical services, or rather the annihilation of the three Indian medical establishments, for that is the real meaning and drift of the scheme.

Bengal Medical Establishment before 1861.

Surgeons. - - - - - - -	140	
Assistant Surgeons. - - - - -	285	
		425

Madras Medical Establishment before 1861.

Surgeons. - - - - - - -	76	
Assistant Surgeons. - - - - -	167	
		243

Bombay Medical Establishment before 1861.

Surgeons. - - - - - - -	56	
Assistant Surgeons -- - - - -	137	
		193
Total. -		861

"Now that the Indian Navy has been abolished, the number of Assistant Surgeons required for Bombay will not be so great, and may be put down at 120. Still a staff of about 850 medical officers must, in some way, be kept up for the native army, and the various civil medical duties throughout this vast empire. There are just now 45 vacancies in Bengal, 36 in Madras, and 10 in Bombay; total 91. So that the

total number of medical officers on the Indian lists, including those of furlough, is 753."

"The strength of the Medical Service in the Royal-Army is at the same time as follows:

	1861.	1863.
General Staff. - - - - -	380	411
Life Guards and Dragoons. - - -	65	66
Artillery and Military Train. - - -	109	106
Line Regiments. - - - - -	386	379
Colonial Regiments. - - - -	25	25
	965	987
Mean - - - -	976	

"If we say that 950 medical officers are required for the Royal Army, and 850 for Indian service, it will be pretty nearly correct: so that 1,800 medical officers will have to be kept up for the amalgamated service, of whom about three-fourths are required for constant service in India; and unless higher inducements are held out, Royal warrants respected, and some fixed plan for promotion to the grade of surgeon adopted, it can hardly be expected that candidates will be forthcoming."

"The medical officers are of all ages from 22 to 60, and the annual decrease by deaths and retirements, &c., is 8 per cent. Consequently, to keep up a staff of 1800, 144 assistant surgeons must join the army every year. How this is to be accomplished, in the present state of public feeling towards the Medical Department of the army, and when the schools and colleges of Great Britain and Ireland are doing everything in their power to dissuade students from entering the service, "until Government are coerced into acknowledging the claims of the Medical Service," is the problem to be solved by the authorities at the War Office and the Secretary of State for India. Many think, that what is wanted is a speedy settlement of the medical amalgamation scheme; a revised and increased scale of pay for India, after the manner of the English scale, viz., so many rupees per diem as unemployed pay, or pay of rank, and a monthly staff allowance for regimental and other charges; promotion of the grade of surgeon after a fixed term of service, say ten or twelve years. Nothing has lowered the Army Medical Service in public estimation, more than the idea of uncertainty, which has become attached to it, and the way in which the Royal warrant have been openly set at naught."

"We have been informed that there is a desire to keep this matter in the dark, but every well wisher of the soldier must admit, that it is for the benefit of the army as well as of the medical officer, that it should be made widely known."—*Times of India.*

The state of Public opinion in England regarding the Army Medical Department.

"THE thirty-first annual meeting of the British Medical Association was held in Bristol on the 5th, 6th, and 7th of August, 1863. * * * The report of the Council was then read by Dr. Williams, the Secretary, from which it appeared that the total number of Medical men now belonging to the Association is 2,217; the district branches were represented as flourishing; the management of the journal was referred to with sincere satisfaction, and the finances were represented as very encouraging. Medical legislation, poor-law medical reform, &c., were then fully entered into and discussed, and the Council directed its attention to the efforts now being made by the medical officers of the Army and Navy to maintain their rank and privileges, and recommended the adoption of memorials to the Secretary of State for War and the First Lord of the Admiralty relative to the grievances under which the Army and Navy medical officers suffer, through the warrants establishing their rank with their combatant brethren being virtually set at naught by the commanding officers. The memorials, which were unanimously adopted, were as follows:—

"*To the Right Honourable* EARL DE GREY *and* RIPON, *Secretary of State for War.*

"We, the president and members of the British Medical Association, numbering more than two thousand of the principal medical practitioners of the metropolis and the provinces, feeling deeply the grievances of which our medical brethren of the Army have to complain, approach your lordship to request that you will take the necessary steps to remove the grounds of such complaint, especially by securing to the army medical officer the precedence and advantages conferred upon him by the Warrant of 1858. We feel that your lordship and your predecessors have been anxious to place the Army medical officer in a position becoming the gentleman and the educated medical practitioner. Wearing the same uniform, sharing the same dangers, entitled by the different Army Warrants to rela-

tive rank according to the length of service, it is yet notorious that the tendency on the part of commanding officers in the Army is to destroy the effect of the Warrants, and to deprive the medical officer of the advantages and privileges due to him.

"We therefore earnestly entreat your lordship to inquire into the grievances of our Army medical brethren, which are now preventing many of our profession from devoting themselves to the Army medical service, and to take the necessary steps for enforcing the carrying out of the Warrants issued for securing to the Army medical officer his proper and legitimate position, and for extending the principle introduced by such Warrants, so as to place him on a full equality with his combatant brethren."

"*To His Grace the* DUKE OF SOMERSET, *First Lord of the Admiralty, &c.*

"We, the president and members of the British Medical Association, numbering more than two thousand of the principal medical practitioners of the metropolis and the provinces, feeling deeply the grievances of which our naval medical brethren have to complain, earnestly request your grace to cause an inquiry to be made into the causes of such complaint, and to secure to the medical officer a position becoming a gentleman and a member of a liberal profession. Sharing the same dangers, and wearing the same uniform, the naval medical officer, especially the Assistant-Surgeon, is yet virtually denied the position due to his relative rank in the service: and hence many most highly educated and intelligent members of the profession shrink from a service to which they would otherwise devote themselves with energy and success."—*A. & N. Gazette.*

Coffee Leaf Tea.

Dr. J. SHORTT having addressed a letter to the Agri-Horticultural Society of Madras, proposing Coffee Leaf Tea as a refreshing beverage (his letter having been accompanied by samples), the Secretary intimated to the Committee that an infusion of these leaves had been tried, but that it was not approved of as a drink, though it had somewhat of the flavour of Coffee. The Committee were of opinion that the samples exhibited had not undergone proper manipulation, as parts of the leaves seemed burnt and brown from artificial heat, while others were of a pale-green colour.

A second trial of a subsequent consignment of leaves better prepared evoked a very unflattering opinion as to the value or palatableness of Coffee-Tea as beverage.

The Botanic Gardens at Calcutta.

"Dr. Anderson's Report of the Royal Botanic Gardens, Calcutta, during the past official year, appears in the *Gazette*. The planting out of the groups of natural orders was commenced last rainy season. Two specimens of all the species of a considerable number of Orders were placed in their proper sites. The botanical name and native country of the plant, painted on a large zinc label screwed down on an iron rod of about two feet high, was placed near the best developed specimen of each species. 2,500 seedlings of Mahogany were reared for planting along the portions of the Ganges and Darjeeling Road between Titalyah and the foot of the Himalayas. Three hundred seedlings of *Polyalthia longifolia* were prepared for forming an avenue along the Circular Road in Calcutta. Six hundred and eighty plants of *Diospyros embryopteris* were supplied for planting along the banks of the Circular Canal. Of the 15 Wardian cases each with 150 Chinchona plants obtained from Ootacamund, 4 were sent to Dr. Jameson at Seharunpore, and 11 were obtained by private individuals for experimental cultivation on Tea estates. 420 plants were added to the stock in the Darjeeling Nursery. Planters should remember that the only time the introduction can be attempted with any hope of success, is from 15th November to 15th February. The tedious duty of arranging the Herbarium, commenced by Dr. Thomson in 1856, is about half completed, and as two European Botanists have been appointed for the work, it will be finished in 4 years. Dr. Thomson's valuable Botanical Library was purchased for the Gardens for £300."—*Friend of India.*

The Therapeutic value, and Botanical Character, of Sarracenia Purpurea.

To the Editor of the Englishman.

"Sir,—I send you an extract of a letter with the above title, which I have taken from the *Times* newspaper of the 26th May. As the writer of the letter has given his name and address in full as Dr. Logie, of the Royal Horse Guards, Blue, there can be no doubt of the value of the treatment. I write to ask whether any botanist can inform the public of

the existence of this *Sarracenia purpurea* in India. Surely some kinds of the pitcher-plant are found out here.

Yours faithfully,

July 27th 1863. H. B. B."

"* * * Some time ago, seeing a paper written by Assistant-Surgeon Miles, of the Royal Artillery, on the efficacy of the North American plant called the *Sarracenia purpurea*, or pitcher-plant, in the treatment of small-pox among the Indians, my colleague (Mr. Agnis) and myself have given this remedy, which has been imported in this country by Dr. Miles to the house of Messrs. Savory and Moore, a fair trial, and I am happy to say the 11 cases in our hands, have recovered under its peculiar influence. This remedy I consider a boon to the public, for this reason—it is so easily managed; any one can make a decoction or infusion of the root, like tea. An ounce of the root is sliced and infused in a quart of water and allowed to simmer down to a pint, and given in two-tablespoonful doses every four hours, while the patient is well nourished with beef tea and arrowroot. Four of the cases in my hospital have been severe confluent cases ("confluent" means where the head, face and neck are swollen into a misshappen mass, and the pustules thickly running into each other); they have throughout the disease all been perfectly sensible, have had once lent appetites, been free from pain, and have never felt weak. The effects of this medicine, which I have carefully watched, seemed to arrest the development of the pustules, killing, as it were, the virus from within, thereby charging the character of the disease and doing away with the cause of pitting (if I may so express myself to the uninitiated) and thus avoiding the necessity of gutta percha and India-rubber applications, or of opening the pustules. In my opinion, all anticipations of disfigurement from pitting may now be calmed, if this medicine is given from the commencement of the disease."

Upon the foregoing letter and extract we would only remark that the efficacy of Sarracenia by no means proved, and that it is strongly denied by several authorities in England. But we think it well first to republish the following reply as to its botanical habitat and characters, varieties, &c., which was addressed to the Editor of the Madras *Times*.

"Sir,—In a letter, signed H. B. B., which appeared in the *Times*' issue of the 14th instant, on the new remedy for small-pox, the writer asks if the sarracenia purpurea exists in India. I beg to inform you that it does not, as far as is yet known; unless it has been introduced lately. The sarraceniads or water-pitchers consists of only two genera and seven species, and are all confined to the bogs of North America, with the exception of one, the heliamphora nutans, found in Guiana.* Several of the sarraceniads, however, have been introduced into gardens in England, and there can be no doubt of their thriving well in many parts of this country also, even without much care. The writer further

* Lindley's Vegetable Kingdom.

remarks, 'Surely some kinds of the pitcher-plant are found out here.'

"The true pitcher-plants (nephenthaceæ) consist of one genus and five or six species, and their habitats, according to Voigt, are as follows;—1 in Madagascar; 1 in Cochin China; 1 in Java; and 2-3 in Singapore and Malacca. Dried specimens from Singapore of two of the species are to be seen now in the Museum of the Medical College. One species—the nephenthes distillatoria, is mentioned in the Hortus Calcuttensis as having grown in either the Calcutta or Serampore garden. Dr. Voigt mentions the Khassya mountains! also, as a place where it is to be found.

"And though both the Sarraceniads and Nepenths form ascidia or pitchers, yet there appears, according to most Botanists, no natural affinity between them, the former taking rank among the Poppies and Crowfoots,—i. e. among the *highest* of the Exogens; while the latter have their place with the Aristolochias and Spurgeworts—among the *lowest.*

"The question now is—have the Nepenths of the East Indies and China the *same Medicinal properties* as the Sarraceniads of North America?

"This, to say the least, is doubtful.

"There is still another order of plants—the Asclepiads—in which some of the species of the genus Dischidia (found chiefly in Burmah and Malacca) bear pitchers: these plants have generally a scandent habit—are either parasites or epiphytes, and have their pitchers sometimes crammed with rootlets from the branches above. With the properties of the Asclepiads in general, medical men are pretty well acquainted.

"No more of these Ascidiferous plants, I presume, need be mentioned, as they would only prove to have no connection whatever with the question. I trust that I have succeeded in shewing from authority, that the Sarracenia purpurea is not a native of this country, and, that though other pitcher bearers are to be found not very far from us, yet, that they have no relationship with the lately much extolled specific for small-pox.

Your most obedient servant,

J. J. Wood,

Assistant to the Professor of Botany, and Materia Medica.

Medical College, 18*th August*, 1863."

To the foregoing remarks we would add those of Dr. F. W. Morris, Physician of the Halifax Dispensary, and one of the most firm believers in the powers of this medicine. He says, in the American *Medical Times* (as quoted in the Pharmaceutical Journal, August 1st, 1862) that the following description gives all information as to the botanical characters of the plant.

"The Indian cup is found in swamps and moss bogs. Its capacious globular receptacles are generally filled with cool, bland water. The cups are lined with bristles pointing downwards, that entangle the flies that come to drink, so that few escape drowning. It is a very curious and remarkable family of plants, exclusively North American and not to be met with west of the Alleghanies.

The leaves take the form of a long bulbous tube or funnel, like the bowl of a tobacco pipe, terminating with a hood-shaped appendage not unlike an Indians Squaw's cap. The flowers, with their hard involuted crenate calyx, and fine sessile segments, like the yellow water-lily, deep crimson stigmata, and corresponding stamina in form and appearance, are very remarkable. All of the tribe inhabit marshy grounds. The *Sarracenia purpurea* is the most common species, and like all the beautiful things of providence, widely diffuse from Hudson's Bay to the Carolina Northern State. The root consists of numerous short radicles, fibrous and stringy, which, when powdered, have a very faint and agreeable aroma, with a taste very like the willow alkaloid, or salicin. The dose of the medicine (the powdered root) is about a dessert spoonful, simmered in a pint of water down to half a pint, this is divided into two doses, one taken immediately, the other in six hours; no sugar should be given with it. The only functional influence it seems to have, is in promoting the flow of urine which soon becomes limpid and abundant, and this is owing perhaps to the defecated poison or changed virus of the diseases exclusively escaping through that channel. The Sarracenia I take reason to believe a powerful antidote for all contagious diseases—Lepra, Measles, Varicella, Plague, Contagious typhus, and even Syphilis, also a remedy in Jaundice. I am strongly inclined to think it will one day play an important part in all these."

We feel, however, that in the foregoing opinion Dr. Morris is perhaps somewhat too sanguine. This opinion is confirmed by an anonymous correspondent who thus writes to the Editor of the *Madras Times*:—

SARRACENIA PURPUREA.

"DEAR SIR,—Having of late seen several letters in your columns about the reputed remedy for Small-pox, *Sarracenia purpurea*, I have thought that a little definite information on the subject might

prove interesting to some of your readers. The plant belongs to the natural order *Sarraceniacæ*, in which there are three genera, and eight species, of which six are confined to North America, one is peculiar to California and one is found in Guiana! There is no representative of the order in India. In the *Lancet* for December 7th 1861, a paper by Assistant Surgeon Miles of the Royal Artillery appeared, stating that during an epidemic of small-pox in Halifax, Nova Scotia, a Squaw had administered an infusion of the root in numerous cases, the result in every instance being a perfect cure. Next came a letter from a Dr. Morris of Halifax, asserting that he was the first medical man who had used the *Sarracenia* in small-pox, and speaking of its virtues in the most extravagant terms. Subsequent trials in London and Edinburgh Hospitals have not established the reputation of the drug as an anti-varioloid remedy, and we consider the vague statements of Surgeon Major Logie, in his letter to the *Times*, perfectly worthless as evidence. In an article on the *Sarracenia purpurea* in the January number of the *Pharmaceutical Journal* Professor Bentley, than whom we can have no better authority, says :—'We regret to hear in several directions, that hitherto when tried in this country and elsewhere, except in the cases previously noticed *(those of Messrs. Miles and Morris) Sarracenia* has altogether failed to cure, or in any way modify, the progress of small-pox.'

It would certainly be a great blessing to have a certain cure for such an awful disease as small-pox, but as yet there is no evidence to prove that *Sarracenia* is such.

I remain, &c.

———."

To this very sensible letter we would add only one further observation. We find by the *Medical and Surgical Reporter and British American Journal*, that, at a meeting of the Medical Society of Nova Scotia (held at Halifax, where Dr. F. W. Morris resides) a resolution was passed to the effect "that there was not any reliable data upon which to ground any opinion in favor of its value as a remedial Agent."

A Federal Hospital.

"In the first tent I visited lay a handsome young drummer boy, scarcely fifteen years of age, patient and contented. His leg was amputated three inches below the knee. "Well, my boy, you were lucky to save so much of it." "Yes," he replied, "the doctor says I can have an artificial piece put on, so the girls wont know it." By his side lay an Irishman

with his leg off close to his hip. He removed the oil cloth covering, and I saw a stump anything but beautiful. It had not healed, and the seam, or whatever the doctors call it, was much inflamed. "Does it pain you much?" "Yes, all the time; but he who dances must pay the fiddler." By his side was a young fellow who had been shot through the right cheek, the ball breaking the left jaw, then breaking the shoulder blade and lodging in the fleshy part of the arm. His face was frightfully distorted, and he suffered great agony. He was unable to take much nourishment and was very weak. But still, with great difficulty, he told me that the ball had been extracted, and he "thought it was too hard to have the surgeons cut him after the rebels had already made four holes in his body." He then endeavoured to say something else, but the suppressed smile caused so much pain he relinquished the effort. I merely cite these trifles to show the spirits of the men. In the next tent were men with broken legs. They would lay hopelessly in bed, but comparatively comfortable. Their backs were generally propped up by pillows, and the broken limb suspended a slight distance from the bed by the use of an interior splint. This is a very cheap, invaluable article. It is nothing but a thick wire, bent in a rectangular shape, the length to conform to the length of the limb and the width about four inches. Two moveable slides or hooks run on the sides by which it is attached to the top of the tent by a cord and pulley. The bandaged leg is then suspended by this simple contrivance (the splint being above) so that it can be raised or lowered at will without changing the position as set. When a limb has been shot or broken and suspended in this manner, an empty can (that once contained hermetically sealed oysters or fruit) is hung directly over the wound and filled with water. In the bottom is pierced a small hole which just allows a constant dripping of water to keep the bandage sufficiently moist."

"In another apartment were men slightly wounded, who were playing checkers or cards, writing, &c. A showy chandelier was hung in this tent, and two soldiers were making another for the doctor. They were very pretty although barber-polish. Three hoops of different sizes were covered with strips of red and white flannel, and then connected by quill cord. Wooden sockets for the candles were covered with tin foil and fastened at intervals upon the hoops. Other men were carving pipes from laurels or mak-

ing rings from old beef bones. Instead of being a disagreeable sight, a visit to our hospitals is really pleasant, the patients are so much more comfortable than one would suppose."—*New York Paper.*

Pay of Civil Assistant Surgeons in Madras.

THE following letter from the Secretary to the Government of India to the Secretary to the Government of Madras, dated the 29th September, has been communicated to the Principal Inspector General, Medical Department:—

"I am directed to acknowledge the receipt of your letter, No. 668 of the 13th June 1863, to the address of the Secretary to the Government of India in the Home Department, proposing that the salaries of Civil Assistant Surgeons in Madras should be assimilated with those of Officers in the same position in Bombay; and in reply to state that the subject cannot be considered until orders which may now be expected are received from the Secretary of State, on the contemplated revision of the emoluments and amalgamation of the establishment of the Medical Service."

Hospital Writers.

THE *Phœnix* states that "some time ago the Presidency Paymaster refused to pass the Pay Bill of a certain European employed as a hospital writer at Barrackpore, on the authority of a Standing Order, to the effect that all hospital writers should be Natives. With reference to this, and with a view to afford encouragement to poor European private Soldiers and Pensioners, His Excellency the Commander-in-Chief has lately ruled that European Soldiers shall be considered eligible to hold the appointment of Hospital Writer, for which they will receive an additional allowance of Rs. 10 per mensem."

Diphtheria in India.

WE quote from the *Oudh Gazette* of 2nd Sept. the following confirmation of our own experience in Madras. That diphtheria is now a recognized disease in this country is only

too undoubted. Our own pages have recorded cases of it, and we have witnessed others in private practice.

" It is with extreme regret we announce that Diphtheria of a most malignant type has broken out among the scholars of La Martiniere. In our last issue we recorded the death of Master Wall, and we have now to mention that of Master Considine, yesterday. Three other lads are suffering under this disease : the peculiarity of which is that, all the external glands become suddenly swollen to an enormous extent ; which, together with the internal swelling, and rapid formation of a false membrane, in the mouth and fances adhering to the parts affected, and extending to the mucous membrane of the intestinal canal, render the attack very formidable. The Medical officer of the Institution has recommended the school to be broken up ; all the boys, whose parents or friends live in Lucknow, to be sent home ; and the rest into camp.

One of the well known pre-disposing causes of this fell disease is defective drainage ; and no one acquainted with the site of La Martiniere, and who has seen the stagnant swamps that at this season of the year surround the building, will be at all surprised at the outbreak of Diphtheria. We trust this solemn lesson will conduce to enlist the attention of the Committee of Management to the insalubrious state of the stagnant swamps we have alluded to. Their duty is a sacred one."

Liberal Conduct of a Second Dresser in aid of a Medical Charity.

Proceedings of the Madras Government.

Read the following letter from Robert Cole, Esq., Principal Inspector General, Medical Department, Fort Saint George ; to the Honorable A. J. Arbuthnot, Chief Secretary to Government, Public Department, Fort Saint George, dated 15th August 1863, No. 176.

I have the honor to report for the information of Government, that Second Dresser W. Vencatasawmy Naidoo, No. 174, has, by a deed of agreement, made over the sum of Rupees 25 monthly in perpetuity towards the support of the Civil Dispensary at Masulipatam, arising out of the rent of certain shops or godowns belonging to him, in course of erection, and which will be completed before the end of the year. Conduct like this reflects the highest praise on the public spirit of the Dresser, and I have much pleasure in commending it to the favorable notice of Government.

2. Correspondence connected with the subject is herewith sent.

From E. D. EVEZARD, Esq., Acting Civil Surgeon, Masulipatam ; to J. M. JACKSON, Esq., Acting Deputy Inspector General of Hospitals, Northern Division, dated Masulipatam, 6th July 1863, No. 26.

With reference to your Circular Memorandum, No. 521, dated 24th June 1863, I have the honor to inform you that about three years ago in conjunction with the Collector and Judge, a meeting was held here for the purpose of obtaining subscriptions for the Civil Dispensary. We could not get a single Native to come, and the reason given was that they had already subscribed for a new building a year or two before and they did not see any signs of its being made.

The building will now be completed in a few days and I propose to have a meeting on its opening. In the meanwhile the Collector is doing his best to enlist sympathy in behalf of the object in view.

A sum of Rupees 400 realized by the sale of medicine to wealthy patients is now in the Treasury, and I have to suggest that this sum as it is nearly all profit and very much exceeds the actual cost of medicine, be funded for the benefit of the Dispensary, and to propose that if the subscriptions are not sufficient a reasonable sum as proposed by me in my letter, No. 24, dated 24th April 1861, be charged for medicines dispensed to those who are able to pay.

I have also great pleasure in informing you that Second Dresser W. Vencatasawmy Naidoo, No. 174, intends to devote a sum of 25 Rupees monthly for the benefit of the Civil Dispensary from the rent of some shops or godowns which he has been permitted to build in the bazaar at his own expense and that the buildings will be completed before the end of this year.

No. 577.

MEMORANDUM.

The undersigned has the honor with reference to letter, No. 36, dated 6th instant, paragraph last, to ask for what period the Dresser W. Vencatasawmy Naidoo, No. 174, proposes giving up 25 Rupees monthly, so nobly offered by him towards the support of the Civil Dispensary at Masulipatam. If the Dresser would allow it, the Acting Deputy Inspector General of Hospitals, Northern Division, would suggest, he should only give ten (10) a month, which would be considered handsome, and should at once be brought prominently to the notice of the Principal Inspector General, Medical Department, for submission to Government.

(Signed) J. M. JACKSON,
Ag. Dy. Inspector Genl. of Hospitals.

From E. D. Evezard, Acting Civil Surgeon, Masulipatam ; to J. M Jackson, Esq., Acting Deputy Inspector General of Hospitals, Northern Division, Waltair, dated Masulipatam, 28th July 1863, No. 29.

In reference to your Memorandum, No. 577, I have the honor to state that I have mentioned the subject to the Dresser, W. Vencatasawmy Naidoo, No. 174, and to the Collector ; but they inform me that the deed of agreement cannot easily be revoked. The Collector will take care that Dresser Vencatasawmy Naidoo is not out of pocket for his noble enterprise. The property will eventually, more than sixteen years hence, become the Dresser's, subject to a charge of rupees 35 per mensem in perpetuity ; until that time the Dresser and his family will derive no benefit from it, but the satisfaction of working in a good cause as all the rent above Rs. 25 will go towards liquidating the debt incurred in building. I am afraid I did not at first clearly explain the transaction.

No. 2,792.

Memorandum.

Received correspondence from Assistant Surgeon Evezard, herewith submitted, by which you will observe that 2nd Dresser Vencatasawmy Naidoo, No. 174, attached to the Civil Dispensary, Masulipatam, has out of some land of bazaar in his possession granted the munificent sum of twenty-five (25 Rupees) monthly toward the support of the Civil Dispensary, which I respectfully trust you will bring to the notice of Government.

(Signed) J. M. Jackson,

Acting Deputy Inspector General of Hospitals, Northern Division.

To the Secretary to the Principal Inspector General, Medical Department.

Order thereon, 12th August 1863, No. 941.

The Governor in Council has learnt with much satisfaction of the very liberal donation made by 2nd Dresser W. Vencatasawmy Naidoo for the endowment of the Civil Dispensary at Masulipatam, and directs that the thanks of Government be conveyed to W. Vencatasawmy Naidoo.

Agasithamarai (Pistia Stratoites.)

THE following letter was recently brought to the notice of the Agricultural and Horticultural Society of Madras.

To Asst. Inspector General M. Police, Madras.

"SIR,—I have the honor to enclose a plant of the name of Agasithamarai, it grows in the ditch of the Tanjore Fort, and was lately brought in by some of the Prisoners to the Jail, for the purpose of destroying the bugs that infested that building. This it did most effectually.

"The plant is just put down close to the walls in the floor, and its smell apparently has the effect of enticing the bug to it, and then of throwing the bug into a state of torpor from which nothing will arouse it. In two or three nights, the jail has been completely cleared of bugs.

"I send this information as it may not be generally known, and the plant might be made useful in other Jails, also in Military barracks or large Hospitals.

(Signed) W. O. Swanston, *Capt.*

Camp at Tanjore, 2nd July 1863."

We have only to add that the plant referred to is very abundant in some of the tanks about Madras. It is well known to the Natives and has been identified as the Pistia Stratoites. It is now being collected in large quantities and dried for trial in some of the Hospitals in Madras.

This plant is also known to grow in Jamaica, where it is found in the common water tanks. According to Brown it possesses acrid properties, which in hot weather it communicates to the tank water which is thereby rendered injurious. There are six genera and twenty species in this order.

We re-produce from the *English Cyclopœdia* the following account of the *Pistiaceæ, Lemnads,* or *Duck Weeds.* (Vide Natural History, column 363, Vol. IV.)

"Pistiaceæ, Lemnads, or Duck Weeds, a natural order of Endogenous plants. The species are floating or land plants with very cellular, lenticular, or lobed fronds or leaves, some of them wholly destitute of spiral vessels, except perhaps in the pistil. The flowers appearing from the margin of the fronds 2 or 3 naked, enclosed in a spathe, but without a spadix. In the male flowers the stamens are definite, often monadephous : in the female flowers the ovary is 1-celled, with one or more erect ovules ; style short, stigma simple,

ovules anatropal, hemianatropal, or atropel. Fruit membranous or capsular, not opening, one or more seeded; seeds with a fungous testa and a thickened indurated foramen: embryo either in the axis of fleshy albumen, and having a lateral cleft for the emission of the plumule, or at the apex of the nucleus, covered in by a hardened endostome."

"The common Duck-Weed Lemna may be regarded as the most simple of all Phænogamous plants. It inhabits the ditches of the cooler parts of the world. *Pistia* is found in the tropics; *Ambrosinia* in the basin of the Mediterranean."

As the properties of these plants are now under investigation, we hope, on a future occasion, to record the results obtained.

Orders of Government regarding Civil Hospitals and Dispensaries, in 1862.

(Proceedings of the Madras Government.)

Read the following letter* from the Principal Inspector General, Medical Department.

(Here enter 10th April 1863, No. 79.)

ORDER THEREON, 12th October 1863, No. 1,122.

1. In the foregoing letter the Principal Inspector General, Medical Department, submits, with his own observations, the Annual Reports of the Medical Officers in charge of the Civil Hospitals and Dispensaries of the Madras Presidency for the year 1862.

2. The returns, as given in the margin, show a slight falling off in the number of persons attending these Institutions in 1862 as compared with the previous year, the decrease being attributed partly to the generally healthy character of the seasons, and partly to the unpopularity which is said to have attached to the Civil Dispensaries from their having been used as Police Hospitals. Arrangements have, however, been already sanctioned for the accommodation of the Police in separate buildings.

	1861.	1862.
In-patients,	16,609	16,673
Out-patients	2,72,445	2,55,829
	2,89,054	2,72,502

Net decrease in 1862...16,552

3. The stated expenditure on account of the Civil Hospitals for 1862 was Rupees 2,51,143, against Rupees 2,35,149-9-8 in 1861, showing an increase of Rupees 15,994; but of this only about Rupees 2,000 are an additional charge to Government, the remaining, Rupees 13,972-6-8, consisting of grants made by Government

* Printed separately.

to institutions connected with the Monegar Choultry, which were not before included.

4. The details of this expenditure however appear to the Governor in Council to require further explanation. The increase of Rupees 2,022-9-4 has not only occurred entirely at the Presidency, where it appears from the returns that a decrease of nearly 12,000 patients or nearly $\frac{3}{4}$ of the total decrease in the whole number of patients for the year has taken place, but there must be added to it the sum of Rupees 5,518-4-9, which exhibits the decrease of expenditure in the Mofussil, leaving for the Presidency the very unsatisfactory result of an increased expenditure of Rupees 7,540-13-5, and a simultaneous decrease of 11,871 in the number of patients benefitted by it. The Governor in Council cannot admit the increased number of patients at the Leper Hospital, or the explanation suggested by Dr. Cole ascribing the increase to the higher rates of obtaining provisions in 1862, as in any way sufficient to account for this, and will await an early report on the subject.

Expenditure at Presidency in 1862.....	1,68,918	4	1
Deduct special payments.....	13,972	6	8
	1,54,946	13	5
Deduct expenditure in 1861.....	1,47,406	0	0
Remain excess in 1862, Rupees.....	7,540	13	5
Total number of patients treated at all the Institutions of the Presidency, 1861.....	73,781	0	0
Do. do. do. 1862.....	61,910	0	0
Decrease in patients in 1862.....	11,871	0	0

5. The Governor in Council is glad to find that the Principal Inspector General considers the progress made during the year in procuring private aid for the Dispensaries to be on the whole encouraging; but His Excellency considers that the Principal Inspector General would do well to impress more particularly on the Officers in charge of the Civil Dispensaries noted in the margin, the determination of Government to adhere to the resolution announced in the Notification published on the 11th June last. The Governor in Council has read the reports made by these Officers with regret, for though aware that at one or two stations the poverty of the people may seem to leave no alternative, he cannot but think that their apathy in a matter that ought to be so important to them, casts some reflection on the Officers in charge. With a zealous Medical Officer and proper co-operation from the District authorities, there is no place so poor that something cannot be done.

Chicacole, Coimbatore, Coonoor, Guntoor, Malliapooram and Nellore.

6. The suggestion made by Dr. Cole in paragraph 95 of reckon-

ing the sums recovered by the sale of medicines amongst the legitimate assets of the Dispensary where they are received, is approved and may be acted upon at once.

7. The Governor in Council, however, adheres to the opinion expressed in the order quoted by Dr. Cole in paragraph 96 regarding the contract system. With a fixed price for every article supplied away from the Dispensary to any one but a Military Officer with his Regiment, or on sick leave, or the sick poor unable to come to the Dispensary, the Governor in Council cannot see what difficulty there can be in arranging that every one should pay for the medicines he requires as he receives them. The system of charging every one alike for medicine, without reference to the quantity supplied, seems not only unfair to the public and open to abuse, but is less likely to conduce to the great object in view, viz., the establishment of Druggists' shops and the consequent relief of Government from the necessity of supplying the public with medicines. If Dr. Cole has reason to believe that the simple rules for the sale of medicines already sanctioned, are misunderstood or disobeyed, he should take measures to ensure their being attended to for the future.

8. The Governor in Council will now proceed to pass orders on such of the reports as call for remark taking them in the order in which they are given by the Inspector General.

9. *Chingleput.*—Dr. Shortt's exertions in aid of this charity are very creditable to him. Dr. Shortt has also been instrumental in establishing a new Dispensary at Conjeveram, to which the Natives of the District have contributed very liberally.

10. *Coconada.*—The Governor in Council notices with pleasure the endeavours made by Assistant Surgeon Lloyd to establish a Mortuary Register at this station. From the result of the calculations from the Register kept last year, it seems doubtful whether the latter can as yet be entirely depended on; but it is no small matter to have made a beginning. His Excellency is much pleased also at the exertions made by Captain Thomson, the Master Attendant of the Port, in procuring private aid for the Dispensary.

11. *Cochin.*—The Governor in Council does not clearly understand the Principal Inspector General's remarks on Mr. Day's report; he would seem to propose the disposal of the Government grant for dieting in a way that would imply its being a permanent endowment of the Hospital by Government, a supposition directly opposed to all recent orders on the subject. Mr. Day is at liberty to expend the money raised by subscription in the way that may be deemed most advisable by himself and the subscribers, but the Government grant of Rupees 50 for dieting, while drawn at all, must be expended on that alone. The Governor in Council will, if necessary, be prepared to consider applications for repairs to the Government Hospital buildings separately.

12. *Cuddalore.*—The Governor in Council observes that the Branch Dispensary was established in the Old Town upon the understanding that it should cause no expense to Government. His Excellency does not consider that this end is gained by handing over the subscriptions received at the principal Dispensary for the support of the Branch, and then letting the whole charge for the former fall upon Government. Both Dispensaries will be equally liable to be closed under the Notification of June last, and it is only fair therefore that each should have the benefit of its own subscription.

13. *Madras Black Town Dispensary.*—The decrease in the number of the out-patients at this Dispensary by 4,590 out of last year's total of 10,970, which was again 1,000 below the average of the ten previous years, is very remarkable. The Governor in Council would have been glad to have had the Principal Inspector General's opinion as to the causes of this sudden falling off amounting to nearly one-half of the average number treated. Dr. VanSomeran, it seems, is at a loss to explain it, for it can hardly be attributed to the absence of one Dresser, or the return of any one Doctor to the Mission Dispensary.

14. *Leper Hospital.*—The Governor in Council does not think that the course suggested by the Inspector General in paragraph 53 would be advisable in regard to this Hospital. Lepers are a class of patients that must always be more than any other, dependdent on public Institutions for treatment, and one that the Governor in Council would be averse to rejecting except on the ground of absolute necessity. He thinks that the objects of the Institution are much more likely to be gained, and that the interest of Government will at the same time be duly protected by the submission of an estimate of the requirements of each year by the Officer in charge.

15. *Lying-in-Hospital.*—The Governor in Council remarks with pleasure the continued success of this Institution.

16. *Sanitary condition of Black Town.*—The attention of the Municipal Commissioners will be drawn to the suggestion made at the commencement of paragraph 61.

17. *Madura.*—The Governor in Council has already expressed his satisfaction at the liberality of the people of this District in subscribing* for the permanent endowment of the Civil Dispensary. He has now only to record his high appreciation of the exertions made for this object by Mr. Levinge, to which the success of the subscription is mainly attributed, and of Assistant Surgeon Wilson and Native Surgeon Anthony Pillay, the Officers in charge of the Dispensary. The success of these Institutions cannot but depend in a very great degree on the personal character of the Medical Staff.

* Rupees 60,000

18. *Manargoody.*—The Governor in Council sanctions the entertainment at this Dispensary of four female pupils to be instructed as midwives, on salaries of Rupees (3½) three and a half per mensem, as recommended by the Inspector General. The success of the Manargoody Hospitals is very creditable to Native Surgeon Moottoosawmy Moodelliar.

19. *Masulipatam.*—The Governor in Council observes with reference to the remarks made by Dr. Cole in the latter part of para. 71, that there will be no objection to the local Committee's carrying out any work themselves for which they have raised the funds; but when the funds are granted by Government, as appears to have been the case at Masulipatam, the work must be done by Government Officers.

20. *Pollachy.*—The attention of the Collector of Coimbatore will be drawn to the remarks made by the Principal Inspector General regarding this Dispensary.

21. *Trichinopoly.*—The Principal Inspector General's recommendation of the appointment of a Dresser to the Branch Dispensary will be referred to the Military Department, with a view to one being posted to it as soon as available.

General duties of Medical Officers.

The Commander-in-Chief has been pleased, in the *Fort St. George Gazette, 24th October* 1863, to publish, and make applicable to the Madras Army, the following Extract from Her Majesty's Medical (Sanitary) Regulations:—

"Para. 1, page 77.—The Medical Department of the Army and its Officers are charged not only with the Medical care of the sick, but with the duty of recommending to Commanding Officers verbally or in writing, whatever precautionary measures as to Barracks, Encampments, Garrisons, Stations, Hospitals, Transports, Diet, Dress, Drills and Duties, may, in the opinion of the Department and its Officers, conduce to the preservation of the health of the Troops, and to the mitigation or prevention of disease in the Army whether at Home or abroad. But in the event of any verbal representation not being complied with, the Medical Officer shall make a representation in writing on the subject to his Commanding Officer."

We trust that the foregoing duties will not be neglected by Medical Officers, and it is only to be regretted that earlier recognition was not afforded of their claims to be consulted on Sanitary matters. The growing interest in these affairs promises in time to be a means of removing from India the sad *sobriquet* of the "grave of the soldier."

TO OUR READERS.

It will be observed that the date of publication of our present No. is a month later than that of corresponding numbers in previous years.

This alteration has been unavoidable and has arisen from the delay which, of necessity, arises in the preparation of the different quarterly reports which are now to be found in each issue of this periodical.

In order, as far as possible, to secure henceforward greate punctuality than we have hitherto been able to attain, improved arrangements are now in process of completion, which will, we hope, ensure the regular issues of this Journal on the 1st February 1864, and thenceforward at tri-monthly intervals.

We have again, *and most emphatically*, to solicit the attention of our *Contributors* to the desirability of their favoring us with their communications at the earliest date consistent with their convenience, as the late date at which several articles in the present number were received rendered necessary an entire re-arrangement of it, after a large portion had been printed.

The additional trouble and expense hence arising have severely taxed the very limited amount of time which we can devote to our Editorial duties, and the still more limited means supplied by our Subscribers whose numbers have considerably diminished in consequence of the non-accession of new members of the local Medical Service.

We regret to announce the death of our London publisher Mr. J. W. Davies, who died after a short illness, but having, we believe, laid the foundation of a successful business as a Medical Bookseller and Publisher, and we gladly embrace this opportunity of expressing our own personal obligations to him for many acts of kindness, and for the warm interest which he ever evinced in promoting the Home circulation of this periodical.

The temporary cessation of the arrangements made by him regarding exchanges, receipt of new books, &c., will not, we trust, affect the interest of our Subscribers, but we notice that such an interruption has taken place, in order that our readers in England may be aware of one of the reasons which has contributed to delay their receipt of this No. till an unusually late period.

BOOKS RECEIVED.

1.—Practical Lithotomy and Lithotrity, by H. Thompson, F.R.C.S ..... J. Churchill and Sons.
2.—Median Lithotomy, by G. Allarton, M.R.C.S..... Renshaw, London.
3.—Antiquity of Man, by Sir Charles Lyell, F.R.S... .... Murray, do.
4.—On Artificial dilatation of the Os and Cervix Uteri, by fluid pressure from above, by Dr. H. R. Storer, *(Pamphlet)*..... .... Clapp, Boston.
5.—Elm Tents for the Dilatation of the Cervix Uteri, by Dr. H. R. Storer, *(Pamphlet)*..... .... do.
6.—A Review of the treatment of Tropical Diseases, by Joseph Ewart, M.D., Parts I and II, *(Pamphlet.)* Lepage&Co.Calcutta
7.—Report on Civil Dispensaries for 1862, being Selections from the Records of the Madras Government, No. LXXII, ... Graves, Cookson & Co.
8.—Man's place in Nature, by T. H. Huxley, F.R.S..... Williams & Norgate.
9.—Plain and Practical Medical Precepts, by Alfred Fleischmann, Accoucheur Assistant to King's College Hospital, (*Shect.*)..... .... J. W. Davies.
10.—Statistical, Sanitary and Medical Reports of the Army Medical Department, for the year 1861..... Harrison and Sons.
11.—Casper's Forensic Medicine, Vol. 2..... New Sydenham Socy.
12.—A Year Book of Medicine and Surgery, (1862)..... ... Do.
13.—Kramer on Diseases of the Ear..... ..... Do.
14.—Hebra's Atlas of Illustrations of Skin Diseases (3 Plates) Do.
15.—Practice of Medicine in Oordo, by Meer Ushruff Ally, G.M.C.B..... .... Do.
16.—On the Cure of Clubfoot without cutting tendons, by R. Barwell, F.R.C.S..... Churchill & Sons, London.
17.—On the Sanitary state of the Army in India, by Florence Nightingale... .... Stanford, London.

PERIODICALS RECEIVED.

The Lancet,
The British Medical Journal.
The Dublin Medical Press.
The Dental Review.
The Dublin Quarterly Journal of Medical Science.
The North American Medico-Chirurgical Review.
The American Journal of Science and Arts.
Braithwaite's Retrospect.
Ranking's Half-yearly Abstract.
The Medical Critic and Psychological Journal.
Edinburgh Medical Journal.
The American Journal of Insanity.
The do. Journal of the Medical Sciences.
The do. Medical Times.
Transactions of Bombay Medical and Physical Socy.
The Pharmaceutical Journal.
The Stethoscope.
The Canada Lancet.
Social Science Review.
Transactions of the Epidemiological Society of London.

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